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INJURIES OF THE SPINAL COLUMN, WITH AND WITHOUT FRACTURE AND DISLOCATION *

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In injuries of the spinal column the sensory disturbances are the most immediate indicative symptoms of either the possibility of operation or the probability of recovery after operation.

It is needless to speak of the minor symptoms that occur in total destruction of the spinal cord; most of the cases to which I refer are those of extensive lesions which present the classical picture of an absolute loss of sensation below the line of lesion, loss of motion, loss of reflexes and paralysis of the bladder and rectum. In cases presenting that class of symptoms with this clearly defined line of demarcation, it is probable that an intraspinal hemorrhage exists. Usually, however, when the sensory disturbance is irregular, when, for instance, there is loss of sensation on one side high up and on the other side lower down — an irregular line of disturbance of sensation — even when there are loss of motion, paralysis of the bladder and possibly a complete loss of the reflexes, clinically speaking I have noted, and it has been noted by others, that there is very likely to be extraspinal hemorrhage.

The danger in these cases is that the hemorrhage may be intraspinal as well as extraspinal; but this irregularity of distribution of sensation frequently indicates that the lesion is extraspinal rather than into the substance of the spinal cord, giving an indication of a possible favorable operative result.

Operation is also indicated when there is not a complete disturbance of sensation; when the sensation is either unequal on one side, as I have said, or when, with a lessening of sensation, there is not a complete loss of sensation. These cases are favorable for operation, as are also cases which, in addition to these symptoms, show an incomplete, although a rather extreme degree of, loss of motion, even if vesical paralysis is present, provided that an irregular distribution of motor paralysis exists.

If the patient is examined at the very onset and only a partial loss of sensation found, or a complete loss of sensation, and then within twenty-four hours or so a slight return of sensation is found, the case is one which may be susceptible of improvement by operation. In other words, I place the greatest importance in the indications for operation on the sensation as it is at the time of injury, and as it may be a few days after the injury.

Again, a clinical point that has impressed me in these various cases that have come to my attention is this: If the sensation has improved for a day or two and then begins to decline, or shows no further improvement, the operation should be done at that time if there is to be one. A point that arises frequently is the expediency of immediate operation in its bearing from a clinical point of view on future results. Should the operation be performed at once or be postponed? The answer depends entirely on the sensory disturbance.

Dr. Bailey has said in substance that in about one-third of these cases of fractures of the spine there is no spinal-cord injury. If that is so it behooves us to follow the waiting policy as to the time of operation. Investigations by Spiller and Allen, and especially the experimental work of Allen on animals, have shown that many of these injuries will cause, without serious involvement, an edema of the cord substance; and in his experimental work Allen found that in incisions made longitudinally the function of the cord was not involved; at the same time the relief of this edema was obtained, the danger of the edema, as he believes, being the compression of the fibers of the spinal cord, and possibly their final destruction. That is a question, of course, that can be answered only by further experimentation. We do know that the cord is capable of considerable compression; and possibly while a compression due to an edema is somewhat different from a compression due to a body outside the cord, such as a tumor, I am inclined to doubt the destructive condition of even edema of the cord, to the degree which is possibly maintained by Dr. Allen. I think that he has applied this principle, however, in operations in a few cases, with results of which I am not as yet informed.

Mueller[1] reports several cases which have some bearing on this question of early or late operation; I shall refer to two without going into the details of the symptoms.

In one case which has a bearing on the question of early or late operation, the patient was injured July 4, 1910, and operated on July 6. There were the usual classical symptoms in this case of loss of motion, loss of sensation, paralysis of the bladder and loss of reflexes.

The lesion was in the region of the tenth dorsal vertebra. The dura was opened, and the result was entirely successful, return of the function of the bladder, etc., being secured. Of course one case of that kind is not decisive, but it may be an indication of the truth.

In another case, the injury occurred in December, 1909. There was an incomplete paralysis at that time, which later became complete with the loss of reflexes. At the time that the patient was examined in August, 1910, over six months after the date of the injury, there was still loss of reflexes and

* Chairman's Address, delivered before the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June 4-7, 1912.

1. Mueller: Ann. Surg., 1911, liii.

secondary contractions, especially marked in the toes. This patient was operated on by Dr. C. H. Frazier of Philadelphia, August 15. Adhesions were found, as the report shows, but there was apparently no cord softening; but in this case there was absolutely no improvement.

The second case corresponds to a case which was under my observation in Bellevue Hospital, in which, as the result of an injury at the ninth dorsal vertebra, there was complete loss of power, loss of reflexes, and contraction of the toes similar to the case reported by Dr. Mueller; and the patient was operated on about fifteen months after the accident. On operation it was found that the cord was completely disorganized, whether due to a hemorrhage in the cord or not of course it was impossibe to say. There was no improvement in that case. That was a long-delayed operation.

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I think that in these chronic cases in which the patients are often in an excellent physical state, there is little or no danger from the operation. I have had no bad results following such operations in the hands of a careful surgeon; and while we should have a skilled surgeon and one who has considerable knowledge of the technic of that special operation, I think that such technic is to be acquired with comparative ease.

In many cases that have come under my observation it is impossible to tell by the severity of the symptoms at first that we have an absolutely destructive lesion of the spinal cord following the injury. My experience proves that a shock to the spinal column transmitted to the spinal cord can absolutely throw out the function of the spinal cord; though there is no destructive lesion of the spinal cord, the symptoms at the onset are similar in every way to those in absolute lesions of the spinal cord.

This was clearly shown in two cases of bullet wounds which came under my observation.

The first case was that of a woman shot in the back, three bullets entering the body and one passing downward into the spinal column, the *x*-ray showing the bullet lying in the body of the vertebra. When this woman was brought to the hospital she had absolute loss of motion, sensation and control over the bladder and rectum, and evidently, as one would have thought from the character of the wound, the cord had been severed. The only symptom she complained of was pain at the point of lodgment of the bullet; yet in two or three days there was a very slight return of sensation; and the nature of the return of the sensation is in my experience usually of this type, i. e., that the sense of pain is not fully recovered. There is, however, an appreciation of pressure and touch. The hyperesthetic area is located at the line of lesion, but the true appreciation of pain in these cases is not apt to return, although we may have a return of power. The reflexes in this case were lost. For various reasons we did not operate. The course of that case has been the following: Sensation has returned in the last three months that I have observed the patient, and I examined her the day before I left the city. There has been a return of sensation, except that there is no true appreciation of pain up to the line of the lesion. Touch, heat and cold are appreciated. The reflexes had returned with now a condition of exaggeration not only of the patellar but of the Babinski reflex; ankle-clonus was present. The gait, which has improved, is spastic. The bullet which passed into the canal is causing very slight pressure; later I may think it advisable to remove the bullet, but I could hardly have looked for a better result by operation.

The second case was that of a boy who received a bullet wound through the spinal cord, which was easily made out by the *x*-ray, and in about the same region as in the previous case. There was the usual classical picture of loss of reflexes and absolute loss of sensation. At the time of operation a complete severance of the cord by the bullet was found.

Those two cases had similar symptoms at the onset, and yet by waiting in the first case we found marked improvement.

In the case of a man who fell through the hatchway of a ship, 8 or 10 feet, and fractured his spinal column, there was a crushing of the fifth or sixth cervical bodies and a dislocation at the sixth. My last examination of this patient, made May 27, 1912, showed a gradual though not a complete loss of sensation. The paralysis was complete as far as the lower extremities were concerned, but the loss of sensation was not complete. I would consider this case, especially, a proper one for operation, on the grounds that I have already stated, considering that there is probable compression from the bone. As has been well said: A paralysis which gradually goes on after an injury is very apt to be, though no one can say positively, due to bone compression. In this case I should say that the operation ought to be done at an early date.

A case carefully reported by Haven Emerson[2] would be of interest to look into. The lesion was in the sixth cervical vertebra, and at the time there was an incomplete loss of power. This increased gradually in two or three days, so that below the line of lesion there was complete paralysis, the only motion in the arms remaining being the action of the deltoid and the supinator. This patient died without operation in the course of three or four months; and the autopsy showed a complete separation of the arch of the sixth cervical vertebra and a gross lesion to the spinal cord, with softening.

Now, this case is interesting so far as the manner of death in many of these injuries is concerned. In my experience, in most of the cases of cervical injury, very high up or in the lower cervical region, that have proved fatal — especially those due to violent injuries — the patients have died in the course of from three to five days. In most all we find a hemorrhage into the cord substance; and most of them have died of edema. Apparently Dr. Emerson's patient had edema of the lungs, but at autopsy none was found.

Therefore in my conclusions I would lay the greatest stress in reference to the question of the feasibility or advisability and time of an operation, on the following conditions: I would, as I have previously said, depend more largely on the sensory disturbance than on any other symptoms which are present, as to the question of operation. When there is an absolute loss of sensation, with the usual complex of loss of reflexes and paralysis of the bladder and rectum and this well-defined transverse line of demarcation of anesthesia, it seems to me that the condition is unfavorable for operation. Anything that varies from that one condition indicates the possibility of a good result from an operation.

Again, as so many cases are recorded in which there has been a gradual return of sensation without operation, I would wait in almost all cases before proceeding to operate until all sensory improvement had ceased. When that has ceased or there seems to be a recession, I think the time of operation should no longer be delayed.

After a paralysis has existed for several months operation is almost futile. When the symptoms have not changed from the early condition of loss of reflexes, continued loss of sensation and a tendency to contraction of the paralyzed muscles, it seems to me that operation is useless, whether done in a few months or many months following the injury.

I am inclined to operate when there is the slightest chance of recovery, because in the hands of a skilful surgeon there should not be any special danger in the operation itself.

19 West Fifty-Second Street.

2. Emerson, Haven: Arch. Int. Med., August, 1911, p. 150.

Good Advice.—The *Willows Magazine* recommends: "Keep the patient's relatives out in the fresh air as much as possible."

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1912

AN EPIDEMIC OF TYPHOID FEVER IN PHILADELPHIA *

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PHILADELPHIA

To comprehend fully the epidemic of typhoid fever in a certain restricted area of Philadelphia during December, 1911, and January, 1912, on the introduction of raw river water into the city service pipes, it is well to study the morbidity and mortality for the particular district affected by this epidemic (the Twenty-First, Twenty-Second, parts of the Twenty-Ninth, Thirty-Second, Thirty-Eighth, Forty-Second and Forty-Third wards) and the city at large for a period of years, as given in Table 1.

TABLE 1.—TYPHOID FEVER MORTALITY AND MORBIDITY RATES PER HUNDRED THOUSAND FOR THE ENTIRE CITY OF PHILADELPHIA

	Mortality	Morbidity
1906	72.4	674.7
1907	59.3	460.8
1908	34.8	234.4
1909	21.1	153.5
1910	17.4	112.7
1911	14.1	87.5

The morbidity per hundred thousand population in the district affected, with a population of 291,970, and the rest of the city, with a population of 1,288,280, for the months of December and January, is shown in Table 2.

TABLE 2.—COMPARISON OF TYPHOID MORBIDITY IN AFFECTED DISTRICT WITH REST OF CITY DURING DECEMBER AND JANUARY; RATES PER HUNDRED THOUSAND OF POPULATION

December-January	In Affected Districts	In Rest of City
1907-1908	61.9	31.3
1908-1909	50.5	31.1
1909-1910	25.4	16.4
1910-1911	11.6	11.6
1911-1912	130.0	12.1

Under regular operating conditions, water is pumped from the Schuylkill River at Shawmont to the filtration plants at Upper and Lower Roxborough, marked 1 and 2, respectively, on the accompanying map.

The main from the pumping station on the river to the Upper Roxborough plant was broken, Nov. 28, 1911, which put both the sedimentation basin and the filter plant out of service until December 6, and, in order to furnish the district supplied by this plant, raw river-water was pumped directly into the service mains. The lower plant was not affected.

The district marked A on the map (Fig. 1) was supplied by the Lower Roxborough plant marked 2; the district marked C was supplied by the low-pressure system and that marked B, which is on high ground, by the high-pressure system of the Upper Roxborough plant marked 1. The district marked D was supplied by private water companies; that marked E, by the Queen Lane filtration plant, which procured its water from the Schuylkill River, below the intake for the Roxborough plants.

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

The break in the pipe, November 28, occurred in the main leading to the upper plant. It was of such a character that it washed the earth from under four other mains connected with this station and completely cut off the sedimentation basin from the district marked C and B.

Table 3 shows the bacterial count per cubic centimeter in the river-water daily until the break was repaired and

TABLE 3.—COMPARISON OF RIVER-WATER WITH THAT IN THE SERVICE PIPES

1911	Bacterial Count		Turbidity
	River-Water, Per c.c.	Upper Roxborough Plant, per c.c.	Parts per Million
November 28	28,000	28,000	17
November 29	51,000	51,000	60
November 30	26,000	26,000	15
December 1	30,000	30,000	9
December 2	18,000	18,000	9
December 3	47,000	47,000	9
December 4	51,000	51,000	10
December 5	22,000	22,000	11
December 6	22,000	22,000	6
Av. for week ending—			
December 9	31,000	180	0
December 16	80,000	160	0
December 23	81,000	250	0
December 30	29,000	42	0
1912			
January 6	11,000	29	0
January 13	7,800	120	0
January 20	18,000	180	0.5
January 27	43,000	80	0

weekly thereafter in the river-water and in the service pipes; also the turbidity in the service pipes.

The river-water showed colon bacilli present in 1 c.c. during October, November, December and January. The filtered water in the upper plant showed colon bacilli in

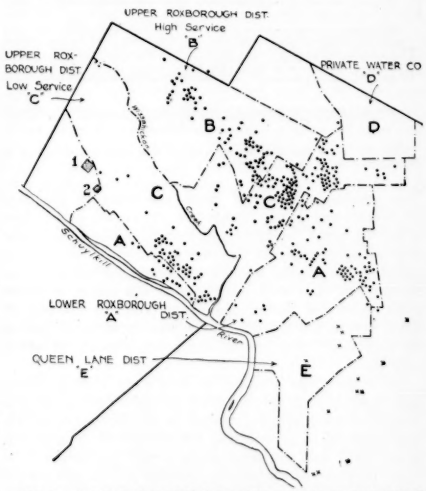

Fig. 1.—Location of typhoid fever cases reported between Dec. 8, 1911, and Feb. 9, 1912, after break in water-main on Nov. 28, 1911. Heavy dots indicate cases in affected districts (367); crosses, cases in adjacent districts.

10 c.c. after December 6, in 62 per cent. of samples examined and in January 54 per cent. until the 27th, after which date the results were negative.

The break referred to was repaired December 6 and filtered water again furnished. During the first week of December there was an epidemic of mild diarrhea in the districts marked B and C, as well as a portion of the district marked A, supposed to have been supplied by water from the Lower Roxborough plant, in which typhoid fever later appeared. These cases were not reported to the health authorities, as there was no mortality, and therefore no statistics are available.

Nine cases of typhoid fever were reported from these wards by physicians, December 26, and from that date until the latter part of January, 367 cases were reported; the largest number (sixty-six) in any one day was reported Jan. 2, 1912. This was in part due to the fact that December 31 was a Sunday and January 1 a holiday.

As physicians are undoubtedly lax in performing their full duty to the state and dilatory in promptly reporting cases to the health authorities, often when delay is dangerous, a medical inspection of each case was made to determine the onset and cause of the disease. Figure 2 shows the onset to have preceded the report of the physician from one to two weeks.

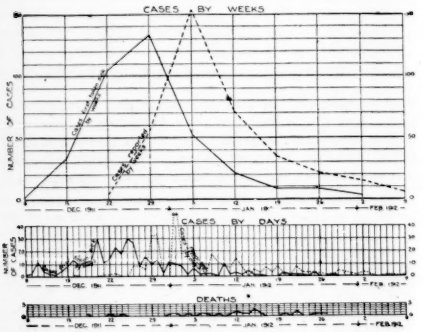

Fig. 2.—Chart showing the interval of time between beginning of cases and reports by physicians.

The greatest number of cases, according to the date of onset, was from twenty-two to twenty-eight days after the break, or from fourteen to twenty days after filtered water replaced the raw water, all of which may possibly have been due to the ingestion of the raw water; but this will not explain the cause of those cases occurring during January, from twenty-two to fifty days after filtered water was introduced, unless by continued infection of the pipes, contact or other sources.

Each case was studied to determine this question, and especially those occurring in that portion of the Twenty-Second Ward (marked A on the map), which was supposed to be receiving unpolluted water from the lower plant and the same water which was received in other portions of the section marked A. It was stated that there was no connection between the pipes of this district and those supplied by mains from the upper plant. Milk was particularly studied from the source of supply to the consumer. No cause could be found outside of water.

A month after the epidemic it was found that an employee of the Water Bureau, to equalize the pressure, opened an emergency valve in the pipe from the upper plant and furnished water to that portion of the Twenty-Second, Thirty-Eighth and Forty-Third wards (marked A), in which numerous cases occurred. In the entire epidemic there were 367 cases among people who had not lived outside of the district during the twenty days preceding their illness, in six of which the mother performed the duty of nurse to the first patient and did the cooking and housework. Seven cases could possibly have been caused by contact. The dozen or more patients in the Twenty-First Ward (marked A) along the river, living in that portion supplied by the lower plant, worked in the mills, frequently visited or attended school in the contagious district supplied by the upper plant.

As there was considerable discussion at the time tending to prove that the epidemic presented some unusual facts concerning age, Tables 4 and 5 have been prepared.

TABLE 4.—MORBIDITY AND MORTALITY BY AGE PERIODS

Age	Number of Cases	Deaths	Fatalities, Per Cent.
0 to 10	79	2	2.5
10 to 20	142	7	4.9
20 to 30	78	10	12
30 to 40	44	2	4.5
40 to 50	17	2	11
50 to 60	6	1	16
60 to 70	2	1	50
70 to 80	1	0	0
Total	367	25	6.8

TABLE 5.—THE MORBIDITY BY AGE PERIOD AND WARDS

Age	Wards							Total
	21	22	29	32	38	42	43	
0 to 10	14	48	..	..	6	6	6	80
10 to 20	25	94	1	..	7	9	4	140
20 to 30	14	46	2	..	8	5	1	76
30 to 40	10	22	2	1	5	..	4	44
40 to 50	3	9	..	..	1	1	4	18
50 to 60	1	2	1	..	..	1	1	6
60 to 70	1	1	..	..	..	..	..	2
70 to 80	1	..	..	..	..	..	..	1
Total..	69	222	6	1	27	22	20	367

The explanation offered of the large proportion of cases after filtered water was introduced is that the raw water supplied to the district from November 28 to December 6 was turbid, which, with the frequent newspaper notices to boil the water, prevented many using it as a beverage; but when clear water was reintroduced, December 6, the people, in spite of the newspaper notices, assuming the water to be safe, again used it for ordinary domestic purposes and the remaining infection of the pipes caused the typhoid during the latter part of the epidemic.

Value of Statistics in Medical Research.—Statistics form the groundwork of science, the armory for action; they contain many secrets of health and life, and in my view the study of statistics relating to disease might yield as rich a harvest for the benefit of mankind as any other field of research. The reports of registrars are full of significance, and might long ago have been employed for a war against maladies in which victories would have been certain, saving millions of people from suffering and early death, and raising the health of the nation to a high level of strength and efficiency.—Rollo Russell in "Preventable Cancer."

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SOME RESULTS OF THE TREATMENT OF THE BALTIMORE DRINKING-WATER BY CALCIUM HYPOCHLORITE*

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BALTIMORE

The destruction of pathogenic bacteria in drinking-water by means of calcium hypochlorite was first suggested in 1894 by Traube[1], who found that one part of available chlorin in 1,000,000 parts of water would practically sterilize the water in about two hours. This method was applied practically in the Chicago Stock Yards in the fall of 1908; and at about the same time the method was instituted at Boonton in order to purify the drinking-water of Jersey City. This method has since been introduced in many American cities, and the amount of chlorin used has varied from 0.2 part per million to 3.04 parts per million, while the bacterial reduction has varied from 77 per cent. to 99.7 per cent.

METHODS PURSUED IN TREATING THE WATER

The water-supply furnished to Baltimore is obtained by two large impounding reservoirs which collect the water, respectively, of the Gunpowder River and the stream known by the name of Jones Falls.* Both of these streams run through a densely populated rural district. The water from each impounding reservoir is then led by a conduit to four storage reservoirs for the Loch Raven system and three for the Lake Roland system, and from these storage reservoirs the water is distributed to the citizens.

The application of calcium hypochlorite to the Baltimore drinking-water was begun in connection with the Lake Roland supply, June 7, 1911, and the treatment of the Loch Raven supply was commenced June 22. The amount of hypochlorite as expressed in parts of available chlorin has been gradually increased and the following amounts have been used. The treatment of Lake Roland was begun with 0.6 part of available chlorin per million parts of water June 7, but was reduced to 0.4 part June 19. This amount was again increased in both supplies to 0.6 part per million, July 23; was again increased to 0.75 part per million, August 29, and was finally increased to 1.0 part per million, October 15. April 15, 1912, an order was issued that when the turbidity of the water was over 50, 1.5 parts of available chlorin per million should be used. The hypochlorite solution is added to the water as it flows through the gate chambers of the large impounding reservoirs known as Lake Roland and Loch Raven. The water from the Loch Raven impounding reservoir then flows through a large tunnel or conduit which is 36,500 feet in length and its area 113 square feet. The water then flows into the first of a series of storage reservoirs known as Lake Montebello; from this reservoir it flows into a second reservoir known as Lake Clifton; from Lake Clifton into a third and a fourth storage reservoir known, respectively, as Lake Guilford and Lake Ashburton. The water from the system is distributed from these last three reservoirs to the citizens.

The water from the impounding reservoir known as Lake Roland flows through the gate chamber into a tunnel or conduit 19,020 feet in length with an area of 25 square feet. This conduit empties into Lake Hampden and the water then flows to Druid Lake and the Western High Service reservoir, whence it is distributed to the city mains and taps.

It will be seen from the above description that the water after treatment does not reach the citizen for a period of many days, and under normal conditions when the reservoirs are full this may be as long an interval as two weeks. The time must vary greatly, for we have records showing the beginning of increased turbidity in Lake Roland followed by the appearance of turbid water in the city taps five days later. We also have records showing increased turbidity and high bacterial counts in both impounding reservoirs followed by a corresponding increased count from the city taps in from five to six days. It would seem, therefore, that when the reservoirs are all full of water the water does not reach the consumer until about two weeks later; but when the water in the storage reservoirs is low the treated water may reach the citizen in from five to six days.

A considerable interval of time also elapses between the treatment of the drinking-water and its entrance into the first storage reservoir of either system. Under the normal feed of 60,000,000 gallons per day it requires 12.2 hours for the water to flow from Loch Raven, one of the impounding reservoirs, to Lake Montebello, the first storage reservoir; but under extreme conditions when the storage reservoirs are filled up quickly this time may be reduced to 4.9 hours. Under the normal feed of 10,000,000 gallons per day it takes 8.5 hours for the water to flow from Lake Roland, the other impounding reservoir, to Lake Hampden, the first storage reservoir; but under extreme conditions of rapid filling of the storage reservoir the time may be reduced to 5.7 hours. Except under very unusual conditions the maximum destructive effect of the hypochlorite on the drinking-water takes place in the tunnels leading from the impounding reservoir to the storage reservoirs, as experiments to be described later will show that the maximum effect of sterilization is usually achieved in about six hours. This method, therefore, allows the hypochlorite to get in its full effect before the water reaches the storage reservoirs where it undergoes considerable dilution.

DESCRIPTION OF A PERMANENT PLANT FOR THE APPLICATION OF CALCIUM HYPOCHLORITE TO THE WATER

As an example of the method of applying the hypochlorite the following description of the plant used for treating the water from the larger impounding reservoir is given. This is a condensed statement of the description kindly furnished by Mr. Emory Sudler, the engineer of the water department, in charge of the plant.

The plant was located at one end of the opening of a chamber extending down to the mouth of the supply tunnel which carries the water by gravity to the city storage reservoirs 7 miles distant. This plant consists of two solution storage-tanks, a syphon or feed-chamber, and a superimposed mixing tank, all of these being made of concrete. The cylindrical solution storage-tanks have a capacity of 2,200 gallons each and have a concave bottom draining to a slot extending to a 3-inch round hole through the wall of the tank. The supply to the feed chamber is by means of a flange connection located slightly above the edge of the concave bottom, to which is attached a 3-inch rubber hose and valve, the hose

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* From the Laboratory of the State and City Boards of Health, Baltimore, Maryland.

1. Traube: Ztschr. f. Hyg., 1894, xvi, 149.

being connected to the feed-chamber similarly. The waste or drain is carried by a 3-inch galvanized pipe to a waste chamber in the gate house, whence it flows to a point below the reservoir dam. The siphon, or feed-chamber, is built into one of the angles formed by the joined octagon-shaped solution tanks. In addition to the attachments mentioned above for supplying the solution to this chamber a flange is placed in the center of the bottom of the chamber to which is connected a three-way having a 3-inch valve below it through which the chamber is drained. The other connection to the three-way is a 1-inch rubber hose to which is attached the orifice through which the solution is fed to the water-supply as it enters the supply tunnel directly beneath.

The mixing-tank is superimposed over the other angle formed by the joined octagon-shaped storage-tanks and consists of a concrete cylinder. A slot was molded in the center of the bottom of the tank for attaching the stirring apparatus, and pipe connections similar to those in the above were made with the tank, the waste, or drain, being located under the base of the tank and outside the storage-tank, and the supply, or overflow, being flanged to the wall of the tank by expansion bolts about midway of its depth on the center line between the storage-tanks. This has a swivel spout which may be revolved so as to discharge into either storage-tank, and both connections are provided with valves. The working platform is built on a level with the top of the mixing tank for the drums of hypochlorite, and a 2-ton traveling chain-hoist is used for hoisting the drums to the platforms. A gasoline engine pumps water at the rate of from 1,500 to 2,000 gallons per hour to the mixing-tank, the valve being placed on the supply line at the mixing-tank with a relief valve at the pump.

The pump engine also furnished power for the stirring apparatus through reducing gears on a shaft which is belt-driven from a pulley on an engine drive-shaft. An inverted U-shaped iron frame is clamped to the vertical shaft in the mixing-tank, to the prongs of which is attached a cross-arm with six vertical paddles 2½ inches in width and about 18 inches in length bolted to it. These paddles revolve between four baffles of the same dimensions which are secured to the bottom of the tank. The cross-arm of the revolving paddles is prevented from lateral motion by a collar around the pipe which protects the shaft.

The shaft turns in a bronze bearing at the bottom of capped galvanized pipe secured in the bottom of the tank. This pipe affords complete protection to the shaft and bearing. The shaft revolves at about twenty-five revolutions per minute.

The regulating apparatus consists of a float made of concrete plastered on a metal (wire mesh) frame, the dimensions of which are slightly less in plan than those of the siphon or feed-chamber. This is used in that chamber; a wire leads upward from this float to a spirally grooved pulley secured to the roof of the gate-house. This pulley has a sufficient number of grooves to permit the winding of the wire incident to the complete vertical movement of the float and also of another wire leading to a single grooved wheel located over and convenient to the vertical movement of the orifice-hose to which it is attached. The wires being wound on the grooved pulley in the same manner, the float in the chamber and the orifice on the hose move up and down simultaneously.

A counterweight is attached to another grooved pulley which is secured to the same shaft as the one carrying the wire from the float, but the wire to which the counterweight is attached is wound the opposite way from the float wire; this balances the weight of the hose and orifice.

For the adjustment of the head on the orifice, a sliding scale having a thumb-screw clamp is connected between the orifice and the grooved wheel on the wire leading from it.

Attachments for hose connections are provided at four points on the waste or drain piping, so that they may be flushed out when clogged with sediment from the tanks.

TABLE 1.—LAKE ROLAND SYSTEM*

Month		Average Bacteria per c.c.	Bacteria Reduction	Positive Colon Tests			
				0.01 c.c.	0.1 c.c.	1 c.c.	10 c.c.
1911—	Raw water	47,600	.....	.....	60 per cent.	86 per cent.	100 per cent.
July	Storage	725	99.0 per cent.	.....	26 per cent.	57 per cent.	84 per cent.
	City taps	4,410	91.0 per cent.	.....	.....	22 per cent.	64 per cent.
	Raw water	38,540	.....	.....	76 per cent.	.....	.....
August	Storage	1,210	97.0 per cent.	.....	32 per cent.	66 per cent.	.....
	City taps	550	99.0 per cent.	.....	3 per cent.	40 per cent.	.....
	Raw water	15,095	.....	.....	46 per cent.	80 per cent.	.....
September	Storage	286	98.5 per cent.	.....	4 per cent.	31 per cent.	.....
	City taps	170	99.0 per cent.	.....	6 per cent.	30 per cent.	.....
	Raw water	17,830	.....	.....	91 per cent.	100 per cent.	.....
October	Storage	457	99.6 per cent.	.....	7 per cent.	37 per cent.	.....
	City taps	538	99.5 per cent.	.....	13 per cent.	33 per cent.	.....
	Raw water	58,045	.....	.....	36 per cent.	91 per cent.	.....
November	Storage	627	98.9 per cent.	.....	.....	19 per cent.	.....
	City taps	1,430	97.6 per cent.	.....	4 per cent.	26 per cent.	.....
	Raw water	6,540	.....	.....	20 per cent.	35 per cent.	.....
December	Storage	583	91.0 per cent.	.....	.....	12 per cent.	.....
	City taps	642	91.1 per cent.	.....	5 per cent.	10 per cent.	.....
1912—	Raw water	22,230	.....	4 per cent.	40 per cent.	76 per cent.	.....
January	Storage	770	96.5 per cent.	.....	.....	28 per cent.	.....
	City taps	1,248	94.4 per cent.	.....	2 per cent.	16 per cent.	.....
	Raw water	50,885	.....	.....	40 per cent.	83 per cent.	.....
February	Storage	1,537	97.0 per cent.	.....	.....	27 per cent.	39 per cent.
	City taps	4,238	91.7 per cent.	.....	.....	9 per cent.	57 per cent.
	Raw water	40,697	.....	24 per cent.	67 per cent.	.....	.....
March	Storage	4,034	90.1 per cent.	.....	.....	58 per cent.	91 per cent.
	City taps	7,691	81.2 per cent.	.....	.....	16 per cent.	63 per cent.
	Raw water	18,727	.....	44 per cent.	90 per cent.	.....	.....
April	Storage	11,533	38.5 per cent.	.....	.....	16 per cent.	72 per cent.
	City taps	43,605	132.2 per cent.†	.....	.....	36 per cent.	50 per cent.

* Available chlorin: 0.4 part per million during June and July; 0.6 part per million during August; 0.75 during September and to October 15; 1.0 from October 15 to April 15; 1.5 from April 15 to June 1, when turbidity reached a point higher than 50. † Increase.

BACTERIAL REDUCTION EFFECTED BY THE TREATMENT OF THE BALTIMORE DRINKING-WATER

As has been stated above, the amount of hypochlorite as expressed in parts of available chlorin was increased on several different occasions, and the results as shown by monthly computations indicate that the larger amounts of hypochlorite have produced the greater bacterial reduction. The treatment of the water was hardly well under way until about the middle of June, 1911, and the comparative monthly results will therefore be given beginning with the first of July, these being expressed in Tables 1 and 2.

These tables can be consulted in detail for the various monthly averages concerning the reduction in the number of bacteria present in the storage reservoirs and in the city taps. It may be said that from July, 1911, to February, 1912, inclusive, in the water taken from the Lake Roland system the bacterial reduction from the storage reservoirs and from the city taps has varied between 91 and 99 per cent. The presence of the colon bacillus in 0.1 c.c. in the raw water has varied between 90 and 36 per cent., while in the treated water it has varied between 7 and 2 per cent. In 1 c.c. of the raw water the colon bacillus has varied between 100 per cent. of positive tests and 35 per cent., whereas the treated water has varied between 58 and 9 per cent.

In the water from the Loch Raven system during the months of July to December, inclusive, the bacterial reduction has varied between 99 and 90 per cent. The colon bacillus in 0.1 c.c. of the raw water has varied between 89 per cent. of positive tests and 15 per cent. of positive tests, and the treated water has varied between 23 and 0 per cent. In 1 c.c. the percentage of positive tests has varied between 100 and 55 per cent., and in the treated water between 56 and 4 per cent.

The water from the Lake Roland system in March and April has shown a much smaller bacterial reduction and in one case has shown an actual bacterial increase of 132 per cent. During February, March and April the water from the Loch Raven system has shown only a moderate bacterial reduction. The figures in detail can be seen in the table, but the lowest bacterial reduction has been 12 per cent. and the highest 51 per cent. Some of the months show a bacterial increase varying from 9 to 83 per cent. These bacteria which reduce the percentage of reduction or which actually show the bacterial increase or so-called "after-growth" are mainly resistant spore-bearing organisms or a yellow chromogenic bacillus.

Very early in the examination of the treated water we were struck by the large number of positive presumptive tests from which we were unable on plating out to obtain the colon bacillus. We determined, therefore, to examine some of these cultures for the presence of anaerobic, fermenting organisms. In all we have studied forty-four such cultures. These were plated out three times for the colon bacillus, and in no instance was this organism found. On these plates nothing grew save a few spore-bearing organisms of the subtilis type. Anaerobic plates were then made from these fermentation tubes, and from three cultures the *Bacillus sporogenes* was isolated. In six others we found the *B. aerogenes capsulatus*.

On consulting these tables it can be seen that the best results in the elimination of the intestinal organisms from the storage reservoirs and the city taps were obtained after the hypochlorite had been increased so as to represent 1.0 part of available chlorin per million parts of water. The results in the general bacterial reduction are variable, but these have been influenced somewhat by a great increase of the spore-bearing organisms. These so-called "after-growths" may be due to the fact that all of the non-spore-bearing organisms, including the intestinal bacteria, are destroyed, and that the spore-bearing bacteria, deprived of their natural enemies, develop unresisted.

THE INFLUENCE OF THE HYPOCHLORITE TREATMENT IN REDUCING THE TYPHOID MORBIDITY AND MORTALITY IN VARIOUS CITIES

The city of Trenton, according to Hottel,[2] started to purify its water-supply obtained from the raw Delaware

2. Hottel: Munic. Jour. and Eng., 1912, xxxii, 589.

TABLE 2.—LOCH RAVEN SYSTEM*

Month		Average Bacteria per c.c.	Bacteria Reduction	Positive Colon Tests			
				0.01 c.c.	0.1 c.c.	1 c.c.	10 c.c.
1911—	Raw water	60,800	.....	.....	62 per cent.	88 per cent.	100 per cent.
July	Storage	1,835	97.0 per cent.	.....	23 per cent.	56 per cent.	89 per cent.
	City taps	1,580	98.0 per cent.	.....	12 per cent.	29 per cent.	62 per cent.
	Raw water	39,560	.....	.....	89 per cent.	.....	.....
August	Storage	2,497	94.0 per cent.	.....	14 per cent.	48 per cent.	.....
	City taps	134	99.5 per cent.	.....	11 per cent.	37 per cent.	.....
	Raw water	12,409	.....	.....	74 per cent.	.....	.....
September	Storage	754	94.1 per cent.	.....	14 per cent.	39 per cent.	.....
	City taps	336	95.9 per cent.	.....	.....	33 per cent.	.....
	Raw water	4,260	.....	.....	82 per cent.	.....	.....
October	Storage	638	98.6 per cent.	.....	13 per cent.	39 per cent.	.....
	City taps	596	99.0 per cent.	.....	2 per cent.	33 per cent.	.....
	Raw water	129,996	.....	.....	55 per cent.	.....	.....
November	Storage	1,227	99.1 per cent.	.....	7 per cent.	20 per cent.	.....
	City taps	1,085	99.2 per cent.	.....	8 per cent.	38 per cent.	.....
	Raw water	19,313	.....	.....	29 per cent.	92 per cent.	.....
December	Storage	1,916	90.1 per cent.	.....	5 per cent.	22 per cent.	.....
	City taps	1,227	93.7 per cent.	.....	.....	12 per cent.	.....
1912—	Raw water	5,577	.....	4 per cent.	15 per cent.	61 per cent.	.....
January	Storage	2,720	51.3 per cent.	.....	.....	4 per cent.	.....
	City taps	3,801	31.9 per cent.	.....	.....	9 per cent.	.....
	Raw water	10,238	.....	6 per cent.	25 per cent.	55 per cent.	.....
February	Storage	8,960	12.5 per cent.	.....	.....	.....	.....
	City taps	11,207	9.0 per cent.†	.....	.....	5 per cent.	29 per cent.
	Raw water	17,664	.....	.....	71 per cent.	81 per cent.	.....
March	Storage	11,735	33.6 per cent.	.....	.....	25 per cent.	50 per cent.
	City taps	28,039	62.0 per cent.†	.....	.....	15 per cent.	50 per cent.
	Raw water	17,310	.....	.....	75 per cent.	100 per cent.	.....
April	Storage	23,276	34.4 per cent.†	.....	.....	41 per cent.	86 per cent.
	City taps	31,825	83.0 per cent.†	.....	.....	77 per cent.	59 per cent.

* Available chlorin: 0.4 part per million during June and July; 0.6 part per million during August; 0.75 during September and to October 15; 1.0 from October 15 to April 15; 1.5 from April 15 to June 1, when turbidity reached a point higher than 50. † Increase.

River water, Nov. 9, 1911, with calcium hypochlorite. They began with 0.4 part of available chlorin per million parts of water, but this was soon increased to 0.8 part, and has since then varied from 0.8 to 1.0 part per million, with a daily consumption of about 20,000,000 gallons. At this time there was a typhoid epidemic in Trenton, but soon after the hypochlorite treatment was instituted Hottel states that the typhoid dropped abruptly. Quoting his statistics: "During the month of November, 1911, there were eighty-two cases of typhoid reported and during December, forty-nine. For the first three months of 1912 there has been a total of only fifteen cases; in 1911 for the same three months there were fifty-two; in 1910, forty-seven."

The reduction of typhoid fever in Kansas City by the hypochlorite treatment as described by

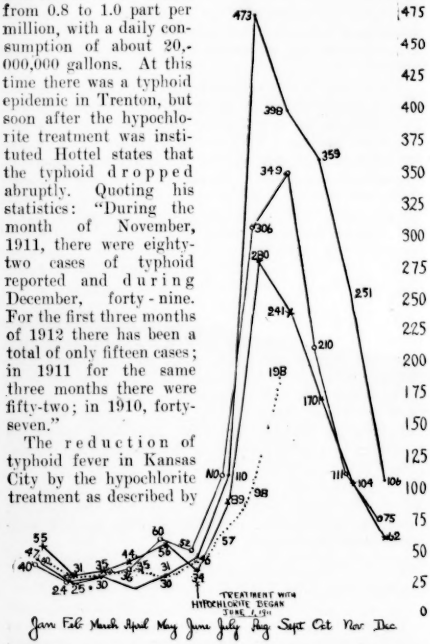

Chart showing cases of typhoid fever reported in Baltimore by months. Cases in 1910 are shown by the line joining solid dots; 1911, by the line joining the crosses; average for five years, 1906-1910, by the line joining the hollow dots; typhoid during the first months of 1912, by the dotted line.

Cross[3] has also been marked. The drinking-water of Kansas City was obtained from the sedimented, but otherwise untreated, Missouri River water; but during 1911 this water was treated with calcium hypochlorite. During the year 1910 there were 107 deaths from typhoid fever, and during the year 1911 only sixty-one. There is a marked difference between the typhoid during January, February and March of 1910 and that for the same months of 1911, twenty-one and ten, and for the latter three months six, six and four.

On analyzing the records of typhoid morbidity and mortality for Baltimore, we have thought it best to compare the monthly figures beginning with the year 1906 and ending with the year 1910 with the figures for the corresponding months of 1911 and with those of 1912 up to June 1. Table 3 shows the figures in detail.

"On examining Table 3 it will be seen that the number of cases of typhoid during 1911 is less by 202 than the average number of cases for the past five years, and the deaths are less by thirty-eight than the average number of deaths for the last five years. On examining the comparative figures for 1910 and 1911 a much greater difference is observed, for although the reported cases for the first five months in 1911 were nearly double the figures in 1910, yet there is a marked diminution of both cases and deaths beginning with June, when the hypochlorite treatment was begun. The total number of cases for 1910 was 1,891, whereas the total number for 1911 was only 1,201. The total number of deaths for 1910 was 235, whereas the total number of deaths for 1911 was 154. The tables for the last five years certainly show a tendency toward a gradual increase in the cases of typhoid yearly, and this makes the reduction in the cases and deaths for 1911 slightly more favorable, especially when we bear in mind that there has been an estimated increase in the population since 1906 of 25,000."[4]

The number of cases and the deaths for January, February and March, 1912, have not shown the same appreciable reduction, as compared to 1910, 1911, or the average for the past five years. The month of May, however, seems to show a slight reduction as compared to other years, but we can only add that we hope for a similar reduction in typhoid during the summer months of 1912 as we observed during 1911.

The chart shows in a graphic manner the decrease in typhoid cases after the hypochlorite treatment of the water was begun. The lines connecting the solid dots show the number of reported cases by months in Baltimore in 1910. These reach a maximum of 473 cases in August. The lines connecting the hollow dots show the

3. Cross: Eng. News, 1912, lxvii, 779.

4. Am. Jour. Pub. Health., ii, 288.

TABLE 3.—TYPHOID FEVER IN BALTIMORE, JANUARY, 1907, TO DECEMBER, 1911, SHOWING DECREASE IN MORBIDITY AND MORTALITY SINCE THE USE OF HYPOCHLORITE *

Month	1906		1907		1908		1909		1910		1911		Average 5 Yrs. 1906-1910		1912	
	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths	Case Incidence	Deaths
January	31	12	43	12	47	7	39	16	40	7	55	11	40	10.8	47	9
February	31	6	16	5	26	9	23	3	25	11	31	3	24	6.8	28	7
March	25	6	37	6	36	3	20	5	30	12	35	5	29	6.4	33	11
April	67	11	35	17	24	2	22	4	22	4	44	8	36	11.2	37	10
May	143	12	65	3	40	3	23	5	31	2	56	7	60	5.0	30	2
June	87	5	41	6	47	3	41	6	46	8	34	8	52	4.2	57	3
July	105	14	78	22	149	24	107	11	110	7	89	4	110	15.6	98	15
August	284	34	217	23	339	35	217	20	473	30	280	22	306	28.4	198	22
September	206	32	469	41	364	29	312	24	398	49	241	31	349	35.0	..	..
October	125	26	241	47	187	30	138	23	359	42	170	28	210	33.6	..	..
November	59	15	87	31	99	25	61	10	251	37	104	19	111	23.6	..	..
December	46	10	91	17	68	10	66	9	106	26	62	8	75	14.4	..	..
Total	1,209	183	1,420	230	1,426	180	1,069	136	1,891	235	1,201	154	1,403	192.8	..	..

* Since this article was read we have obtained the records of the typhoid morbidity and mortality for June, July and August, 1912. The figures for these data have been inserted in Table 3 and the record is also indicated in the chart.

average number of cases by months for the five years from 1906 to 1910. The lines joining crosses show the number of reported cases by months for 1911, and it will be seen that the curve for 1911 remains practically above both of the other lines until June. It then crosses the curves for 1910 and for the monthly average of the past five years and remains well below both throughout the rest of the year. The contrast in the chart is quite striking, and the arrow indicates that the hypochlorite treatment was begun about the first of June. It is just at this point that the morbidity begins to drop and the curve indicates that it remains below the other lines during the rest of the year.

The dotted line indicates the typhoid cases during the months of 1912, and it will be seen that, while it falls below the record for 1911, it remains above the record for 1910 and the average for the five years from 1906 to 1910 inclusive until April and May; then it falls below the average record of cases from 1906 to 1910, inclusive.

CONCLUSIONS

The results which we have obtained show that the hypochlorite treatment produced a marked diminution of the bacterial content of the treated water until the last two or three months, when we have obtained variable results owing to the after-growth of resistant, spore-bearing organisms. The treatment has also produced an invariable reduction in the percentage of positive tests for the colon bacillus. We have also noted a diminution in the number of cases of typhoid fever during the months of the past summer and fall, but we cannot draw any final conclusions until we have used the treatment for a period of several years.

ABSTRACT OF DISCUSSION

DR. M. L. HOLM, Lansing, Mich.: I represent a state that has more fresh-water frontage than any other state in the Union. Many cities obtain their water-supplies from surface sources, and, in many instances, their sewage is emptied unpurified into the same body of water. Among the cities obtaining their water-supplies from surface sources contamination is the rule; among those obtaining their public supplies from wells, contamination is the exception, barring occasional accidents. Our state board of health statistician recently compiled a table showing the average annual death-rate per 100,000 population from all causes and from typhoid fever in cities of Michigan of 5,000 inhabitants and over for the years 1904-1910, inclusive. The average annual death-rates per 100,000 population occurring in these thirty-seven cities, for the years mentioned, are as follows:

	All Causes	Typhoid
Cities supplied by water from surface sources (22)	1,518.7	51.7
Cities supplied by water from wells (15)	1,411.3	25.1
Difference	107.4	26.6

Mechanical filters, when properly constructed and managed, will give at least 98 per cent. bacterial purification, and a reduction in typhoid and general mortality is sure to follow. In a few instances, marked reduction in typhoid and general mortality has not followed the installation of mechanical filters, but this is usually because prior to the installation of the filter-plant the public water was dirty and generally regarded as unsafe. Consequently few people would drink it. After filtration, the general appearance of the water being improved, a greater proportion of the population would use it. If a highly contaminated water receives 98 per cent. purification by mechanical filtration and as a result of such purification proportionately more people drink it there will probably be no marked reduction in general and typhoid mortality.

When mechanical filtration is not sufficient to render the supply safe, it is necessary to employ in addition some method of chemical sterilization. In these instances hypochlorite treatment is especially applicable. The use of ozone in our state has been a failure. Many Michigan cities are using calcium hypochlorite direct without the aid of artificial sedimentation or filtration. This is especially adaptable to the water of the Great Lakes, which is generally quite clear and has a low oxygen consumption. The quantity of hypochlorite required varies with the amount of easily oxidizable material present in the water and must be determined for each individual case. Enough must be added to eliminate all organisms of the colon group and excesses producing marked odor of chlorin should be avoided.

MR. SHEPPARD T. POWELL, Baltimore: A series of experiments to determine the efficiency of hypochlorite of lime as a bacterial agency has been made in the laboratory. It was found that as the turbidity of the untreated water increased, the efficacy of the bleach decreased. From the results of these experiments it was found that it was not advisable to apply more than a 0.1 grain of the chemical per gallon of water filtered (approximately 14 pounds of bleach per million gallons of water); increasing the dose above this amount does not give a relatively increased bacterial efficiency. The reason for this is that many of the bacteria present are mechanically protected by the turbidity or matter in suspension, so that the nascent oxygen given off by the hypochlorite does not have access to the organisms and therefore does not act as a bactericide, but is used up in the oxidation of the readily oxidizible organic matter present. This, I believe, is the explanation of the secondary or bacterial growths which are found in the reservoir at Baltimore, after the water has been treated by hypochlorite of lime. The water, as it is treated, often contains high turbidities, much of which is of an organic nature. By treatment with the bleaching-powder many of the organisms present are killed and many are not, and in water with so much organic matter present there is naturally an increased growth in the bacteria that have not been removed during treatment. This, I believe, is the reason for the comparatively low efficiency that has been reported at some places after this treatment, and will account for the failures that will be found in attempting to treat surface water-supplies without filtration.

DR. C. HAMPSON JONES, Baltimore: In order to overcome this difficulty we are now making preparations, through Mr. Whitman, the water engineer, to separate the surface water with alum, and then to have the suspended matter precipitated before it is treated by hypochlorite. A difference of about four days between the two treatments, that is, from the time the water reaches the one point of treatment to the other point of treatment, will demonstrate, I think, the truthfulness of the stand taken by Dr. Stokes.

THE FALLACY OF TESTING FOOD MATERIALS BY ANIMAL INOCULATION

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Some years ago it was seriously proposed to test the purity and salubrity of drinking-waters by means of animal inoculation. Portions of the water to be examined were cultivated in sterilized bouillon at the body temperature, and the resulting cultures after a stated time were inoculated into guinea-pigs, rats or other test animals. If these sickened or died the water was condemned. Fortunately, since some sense of humor still remained among sanitarians, a proposition so absurd was soon laughed out of court. From time to time, however, this discredited "test" is again gravely brought forward even for water, but more often nowadays for some other form of food or drink, such as eggs, oysters, ice-cream, gelatin, catchup, etc. One of

the latest examples — but probably not the last — of such proposed employment of it is for frozen eggs, attacked originally because of alleged "decomposition" as indicated chiefly by richness in bacteria and the presence of numerous *Bacilli coli*, but afterward by inference as dangerous to health because sometimes fatal to animals on inoculation.

The frozen eggs involved in a recent case with which I happened to be connected were entirely sweet and agreeable in taste and odor when thawed. Similar eggs had been used for many years and in large quantities by bakers in pies, cakes, custards, etc., not only without perceptible injury or complaint of any kind but with the greatest convenience, economy and satisfaction. Disregarding these results of long-continued experience, it remained for certain government bacteriologists and physicians to discover that such eggs were really "decomposed" and dangerous to health, first, because of the large numbers of bacteria which they contained; second, because of the presence among these of some streptococci and many *B. coli*; third, because when the raw melted egg was inoculated into test animals some of these died; and, fourth, because after the death of such animals certain supposedly objectionable bacteria, *B. enteritidis, B. pyocyaneus, B. alcaligenes*, etc., were in some instances found in the blood. In other words, over against the long experience of the trade and of consumers of the eggs yielding wholly favorable results of innumerable feeding experiments on human beings, it is now proposed to set up a scanty experimentation on animals; and that not by feeding them as man is fed, and not after cooking of the food materials in question, such as mankind employs, by which process most of the microbes present are destroyed, but by direct injection of large amounts of the raw and uncooked egg substance subcutaneously or into the delicate peritoneal cavity of certain lower animals. To the best of my knowledge and belief, the eggs which it is thus sought to condemn were good and wholesome food, eaten raw or cooked.

It is time to protest against "tests" of this sort which are obviously both irrelevant and misleading, for conclusions based on facts of one order cannot properly be applied to problems of a different order. To realize how unscientific and absurd is the proposal under consideration it is only necessary to recall some simple elementary facts and details.

The body of the higher animals, as every one knows, is not a solid mass completely enclosed by the skin, but a semisolid bundle of tissues tunnelled by a long and folded tube, the alimentary canal or food-tube. This tube possesses its own special walls, expressly adapted for preventing raw food and other foreign substances from entering the real body—which lies between the food-tube and the skin—until such substances have been digested and made ready for absorption. Within this tube, food, whether raw or cooked, is chemically treated until some of its components — but only some — are admitted into the body proper, the remainder being held in the tube, moved onward and eventually cast out.

This fundamental process of preparation or digestion, normally absolutely inevitable, and carefully and even elaborately conducted, is in subcutaneous or intraperitoneal inoculation entirely omitted, so that the latter procedure is in no wise comparable with the former. Hence the results, also, of the one process bear no natural or necessary relation to those of the other. As for the preparatory process of cooking, everyone knows that this not only ordinarily causes profound chemical and physical changes but also destroys most microbes and many toxic organic substances; so that here again the thrusting of raw foodstuffs into the real body becomes a crude and severe procedure, a kind of rough surgical interference, totally different from the normal taking of the same materials into the body by way of the food-tube — perhaps already cooked.

In order to see just where we stand in this matter, we have only to compare the effects of substances of various kinds when taken by the mouth with those of the same substances injected into the real body hypodermically or intraperitoneally. We shall naturally think first of drugs, since it is in the use and abuse of these that resort is oftenest had to direct inoculation. We shall begin, perhaps, with morphin, remembering the familiar fact that a quantity of this drug, which taken hypodermically would quickly kill, can be taken with impunity by the mouth. The same thing is true in a general way of most drugs and poisons, the arrow-head poison (curare) of the South American Indians, for example, being often without marked effect when eaten, but highly poisonous when inoculated into the real body. Most alkaloids, and the toxins of diphtheria, tetanus, typhoid and other infections act either comparatively feebly or not at all when taken by the mouth, but with comparative severity by direct inoculation.

Passing from drugs, alkaloids and metals to beverages, we recall how different is the effect of brandy and other alcoholic drinks when taken through the mouth and when the same quantity is injected subcutaneously. Again, the germs of two of the worst diseases that afflict the human race, namely, lockjaw and anthrax, while extremely dangerous on inoculation, are comparatively innocuous if taken through the mouth.

As for any bad effects on health of the ordinary foodstuffs used from time immemorial by mankind, very little was heard until about 1890, and a careful investigation will show that the evidence of such bad effects accumulated since that time is mostly inconclusive and unsatisfactory. It seems likely that the evolution in the human race of the habit of discriminating among raw foods, and of using chiefly particular materials, such as certain meats, fish, eggs, fruits, nuts, etc., while avoiding others, has arisen as the result of long and hard experience—experience being only another name for long-continued individual or racial experimenting.

Panum (1856), Selmi (1878) and afterward Brieger (1890) appear to be chiefly responsible for the popular belief that "ptomains" are common in spoiled foods, but both investigation and experience since their day have weakened rather than strengthened the idea of dangers of such poisoning. In point of fact, the whole subject of ptomain poisoning and of food poisoning in general stands to-day in great need of reexamination, and until the results of this are forthcoming we are justified in speaking and writing of either with the utmost reserve. When, remembering the enormous quantities of partially decomposed meats, eggs, fish, shell-fish, milk, fruits and vegetables eaten every day either raw, cooked, or half cooked, not only without apparent injury but with positive relish and advantage, we think at the same time of the infrequency of cases of ptomain poisoning proved or even alleged — when, for example, we think of the immense amounts of fermented or partially decomposed milk, buttermilk, ice-cream, meat, fish, game, cheese, sauerkraut, and the like, constantly consumed without inconvenience of any kind and with positive benefit, it is easy to see how extremely rare must be the occurrence of harmful substances in harmful quantities, at least during the earlier

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stages of decomposition or decay of ordinary food materials.

Returning now to the proper testing of the purity or salubrity of food materials, it is an old and true saying that the proof of the pudding "is in the eating" — not in its inoculation into animals. This latter test is irrelevant because unnatural, and hence for determining the purity or healthfulness of food materials absolutely worthless. If it may be used for one food substance it may be used for all, and the absurdity is obvious of seeking to determine the suitability of meats, eggs, milk, fish, etc., for human food by trying them on animals, and that not by feeding but by inoculation. Even that popular test in which we are advised to "try it on a dog" does not contemplate surgical inoculation, but only the ordinary process of feeding by the mouth.

Thus far I have entered no protest against the testing of food materials on the lower animals rather than on human beings, but as a matter of fact such experiments are only allowable when for some good reason they cannot be made — as in the case of eggs and other common foodstuffs they easily can be made—on human beings. Moreover, because of the wide differences between man and the lower animals any results of such experiments on the latter can be accepted for human beings, if at all, only tentatively and with much reserve. It is a significant fact that the lower animals do not appear to be susceptible to typhoid fever, either by inoculation or by feeding. Conversely, none of the diseases to which hens are susceptible appear to be transmissible to man.

What then, if any, we may ask, is the true significance of results obtained by the testing of food materials by the inoculation of animals? The answer is that if the animal survives and suffers no apparent inconvenience, it must be because no microbes or other substances were injected capable of doing that particular animal harm when taken in that dangerous fashion. This does not prove, however, that if the substance were taken through the mouth, no harm would have come, though it makes such a result unlikely, for the reason that the inoculation test is as a rule far more severe than the feeding test. If, on the other hand, test animals are regularly sickened or killed by such inoculation, then the meaning must be that microbes or other substances were injected which were harmful to those animals when administered in this way. But such a result does not prove the unfitness of the material tested for use as food, since the processes of cooking (a kind of external or artificial digestion) and of ordinary (internal or natural) digestion, absorption, circulation and cellular metabolism, may suffice to change it so extensively and to deliver it to the protoplasms of the body so transformed as to make of it, when taken by them in the ordinary way and at their own convenience, a totally different thing from the same material thrust on them in its raw state and whether they want it or not. In short, the mere sickening or death of animals inoculated with raw food materials throws no light whatever on the purity or healthfulness for food of the material injected. Moreover, the finding of this or that microbe in the body of animals after such inoculation neither proves that the microbe came from the food material injected, nor that, if it did so come, it would have survived the processes of cooking, digestion, absorption, etc., to some or all of which it would have been subjected if the material had been administered by feeding instead of inoculation. Finally, there is no proof that, if it had so survived, it would when administered by the mouth have done any harm.

A PRELIMINARY REPORT ON A HITHERTO UNRECOGNIZED SIX-DAY FEVER IN ANCON, CANAL ZONE

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ANCON, CANAL ZONE

In Ancon post-office, five male clerks and one female are employed. On April 27 the two clerks who handle exclusively the incoming domestic and foreign mails were attacked by chills and fever. Though weak and with no desire for food, they continued at work, and, after six days of continued fever, felt better, and were not sent to the hospital.

Across the street from the post-office, to the south, is a two-storied bachelor apartment, numbered 111, with forty-seven occupants. In the opposite direction are other bachelor apartments, one of which is numbered 69.

Of these, there have been afflicted the five male post-office clerks (the female escaped), one man from house No. 69 and fourteen from house No. 111. The latter were almost all roomers on the upper floor. This makes in all twenty cases from this vicinity, whence it has spread to Panama.

On May 7, ten days after the two post-office clerks first sickened, a man who slept in house No. 111 was admitted to Ancon Hospital about 7:15 p. m. practically comatose (see first chart). He was perfectly well all the morning. At 1 p. m. he had a chill with headache, backache and fever. He was thought to be suffering from cerebral malaria, though his blood on repeated examinations was negative for malarial parasites, and quinin was administered by mouth and hypodermically. Apart from the antipyretic action it had only slight influence on the temperature, which reached normal at midnight of May 12, five days and eleven hours after the onset.

The other three post-office clerks sickened on May 9, May 11, and May 18, respectively. Those from house No. 111 sickened on May 21, two; May 23, two; May 25, one; May 27, one; June 1, one; June 3, one, and June 5, one. From house No. 69, one was taken ill on May 28.

At first the cases were all supposed to be malaria, though on patient and repeated examinations no parasites were found. This, however, frequently happens when quinin has been previously administered and the peripheral blood in consequence is free from the organisms.

In these cases, in many of which the patients were admitted the same day they sickened and before quinin was administered, even thick film preparations failed to show parasites, which absolutely negatived the possibility of malaria.

The epidemic was reported as such to the sanitary authorities, but repeated inspection failed to find any breeding-places for anopheles in the immediate vicinity and our suspicions were aroused that we were dealing with some hitherto unrecognized fever.

Careful clinical study then revealed that we were dealing with an affection absolutely new and sufficiently characteristic to be considered a new disease as far as we here were concerned.

Its chief features are:

1. The disease is highly infectious and the infectious period probably precedes the onset of the fever, inasmuch as no cases have occurred in the hospital by contact from the patients admitted, and no precautions have been taken to avoid contact, although some of the patients were admitted on the day after the onset of the disease.

2. There are no constant or characteristic prodromata.

3. There is always an abrupt onset, with chills or chilly sensations, and an initial temperature after the chill of from 101 to 104 F.

4. The cases have all run a course of about six days of fever, more or less continued, with but slight morning remissions and a more or less abrupt fall. Some of the temperatures in individual cases ran highest the day, or second day, before the sudden defervescence. The temperatures on the second, third and fourth days were frequently lower than on the first and fifth days.

After the temperature falls it generally remains normal, but in two severe cases a slight secondary fever of from one to two degrees occurred lasting three days.

5. The pulse- and respiratory-rates remained practically normal. The only pulse-rates recorded over 100 were on admission or after some special disturbance. The range generally was between 68 and 90.

6. The spleen was always enlarged, and its free margin in many cases could be palpated from 2 to 3 inches below the free costal margin. The enlargement was as striking as in tertian or quartan malaria. On the other hand, very little enlargement could be made out in the liver.

7. The blood-picture remains practically unchanged. The leukocyte counts and differentials were recorded as in the accompanying table.

The patient with the eosinophils was suffering also from a slight colitis with ciliated monads.

8. There is always some nephritic irritation as manifested in a slight trace of albumin and a few granular and hyaline casts.

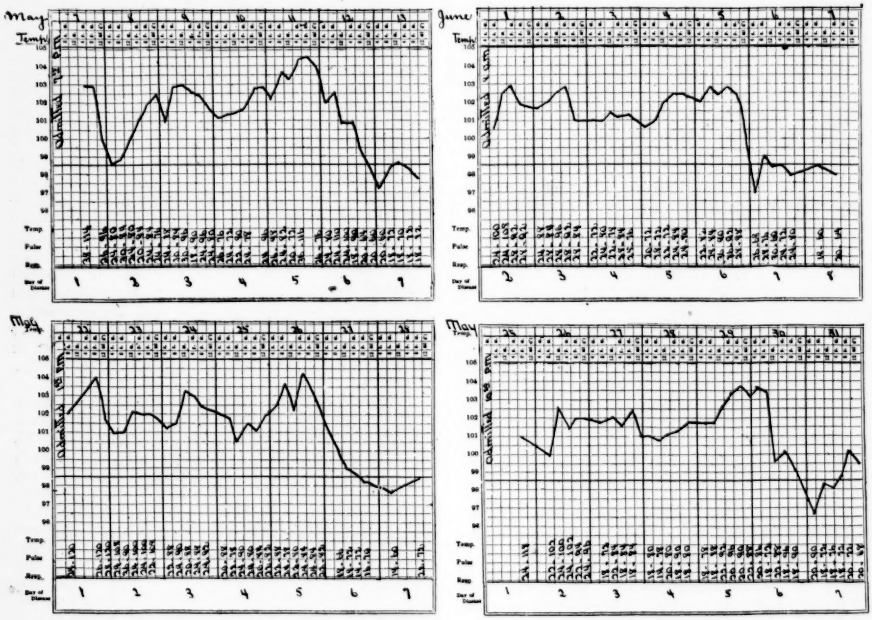
Two of the patients, however, developed a very severe albuminuria with numerous brown granular and hyaline casts. The albumin disappeared within a week after the fever subsided, and after two weeks only a few hyaline casts remained in the urine of the severest case.

9. There is always anorexia during the febrile course and a considerable after-depression. The patients do not react or recover their appetites so quickly as during convalescence from malaria.

10. The period of incubation is apparently about ten days.

The other constitutional symptoms are those of any febrile disease. The patients have some headache, particularly about the eyeballs, which are only slightly injected, and there is no coryza, sore throat or cough.

Vomiting sometimes occurs at the onset, but this feature is not constant; the tongue is only slightly furred and there is no bowel disturbance — neither constipation nor diarrhea.



Temperature charts of four patients with six-day fever.

There are no muscular pains but vague aches in the back and legs.

It is impossible to state whether there is any characteristic skin eruption or not. Most of the patients at present admitted have more or less miliaria eruptions and nothing could be distinguished from this. I am inclined to believe that there is in most cases a general erythematous rash soon after the onset.

Two of the earlier patients admitted, when the disease was supposed to be malaria and large doses of quinin were given, developed a scarlatiniform eruption over the lower extremities, most marked at the feet, which in one later on was petechial in character. This, however, was supposed to be due to the quinin, which frequently produces a similar eruption. One patient also developed a similar eruption on the forearms which disappeared

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within two days. This eruption in the three cases came on after the temperatures were normal. It is possible that it had been overlooked in the other cases. Later observations show that this petechial rash on the extremities after the defervescence of the fever occurs only in the severe toxic cases and is not uniformly present.

The disease can be differentiated from malaria by the absence of parasites, the febrile course and the blood-picture. The large mononuclears are diminished instead of increased as in malaria. It can be distinguished from dengue in being a single-phase fever, with a very large spleen, which is never present in dengue, with no severe bone aches.

It is differentiated from influenza by the absence of coryza symptoms and lung complications, by the blood-picture and the definite course. It is distinguishable from typhus by the length of the course, the milder manifestations and the absence of the rash. From typhoid and allied affections of the paratyphoid series it is differentiated by the onset, febrile course, abrupt termination and cultural blood-findings.

Drs. S. T. Darling and H. C. Clark have taken blood-cultures on different mediums of many of the cases at all stages of the disease and have failed to obtain a

LEUKOCYTE AND DIFFERENTIAL COUNTS

Leukocytes.	Polynuclears	Small.	Large.	Transitional.	Eosinophils.
9,800	48	37	15	..	..
4,000	54	41	4	1	..
9,800	69	28	8	3	..
4,800	64	29	4	3	..
7,600	87	10	2	1	..
.....	83	12	2	3	..
.....	69	23	2	1	5
5,800	69	11	3	..	..
5,400	88	12	4	1	..
8,400	69	25	4	..	..
3,200	65	25	10	..	..
5,000	88	4	6	2	..
4,800	89	5	4	2	..
6,200	70	18	9	3	..

growth. The stools and urines have also been cultured with negative results.

The Widal reactions have all been returned negative.

The affection seems to resemble more the exanthemas minus the constant rash, because of its definite onset and definite course. The temperature always reaches normal on the sixth day and can thus be faithfully predicted.

No medication so far tried has appeared to alter its course in the slightest. We have tried quinin and the salicylates in heroic doses, the only effect being a temporary antipyretic action.

It is probably identical with the seven-day fever referred to by Castellani in his manual of tropical medicine.

It has been described by Rogers and Crombi as occurring in the seaport towns of India and Ceylon during the summer months, May to September. Its origin here and the ten-day incubation period following the development of the third case indicate that it was probably imported by the mails from some infected port.

Leonard Rogers describes cases with a duration of seven and more days of fever and says that blood-cultures in six of his cases were positive for a bacillus related to the *B. coli* group.

As Dr. T. R. Brown and I have shown, it is not unusual to have paratyphoid with seven and eight days of fever. And I am inclined to believe that Rogers has included some of these in his descriptions.

The epidemic is gradually spreading through the city of Panama, where I have seen several cases.

There is no doubt that this is the first time that this fever has been encountered here since the American occupation of the Canal Zone, and it will be interesting to note if it remains with us in epidemic form.

So far there has been no mortality from it, though some of the cases were very severe.

APHASIA AND AGRAPHIA IN SOME PRACTICAL SURGICAL RELATIONS *

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AND EDWARD MARTIN, M.D.
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PHILADELPHIA

Most Important Diagnostic Phenomena.—Motor aphasia and motor agraphia, usually partial, anomia or paranomia, inability to copy or write from dictation when both convolutions are involved; ability to write from copy or dictation preserved when the third frontal convolution alone is involved.

Symptom Sometimes Present.—Partial word-deafness.

Symptoms from Invasion of Neighboring Parts.—Jacksonian epilepsy, usually facial or faciobrachial, inability perfectly to maintain attention, hemiparesis.

The stimulus to present this subject of aphasia in some of its relations to surgical procedure was given by a recent case in which operation was successfully performed and in which the clinical phenomena distinctly indicated implication of the cortex of the hinder portion of the third and second frontal convolutions. Similar cases have been reported by McConnell,[1] Mills,[2] Frazier,[3] and others, but additional reports are desirable especially in the light of the differences of opinion which have arisen since the pronouncement of Marie against the third frontal convolution playing any part in speech disturbances. This we do not believe and our conviction is based on personal experience.

The disturbances of speech and writing are very partial at first, but gradually become more pronounced. The aphasia and agraphia are rarely complete, and the same is true of the concomitant phenomena such as paralexia.

A patient suffering from a more or less destructive lesion of the region we are considering presents few phenomena of sensory or conceptual aphasia; he understands what is said to him and is able to read silently either ordinary print or script. He is not word-deaf, or only to a very moderate degree. He is not word-blind, letter-blind, number-blind or mind-blind, and has no cortical color disturbances.

Tumors involving the third and second frontal convolutions and progressively advancing sometimes give rise to a slowly deepening hemiparesis. Such growths are easily diagnosticated from tumor, hemorrhage or thrombotic softening deeply implicating the lenticular zone (the lenticula, internal capsule, external capsule, claus-

* This article is here abbreviated. The complete article appears in the Transactions of the Section and in the authors' reprints.

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. McConnell, J. W.: Univ. of Penn. Med. Bull., July., Aug., 1905.
2. Mills, C. K.: Philadelphia Med. Jour., April 20, 1901.
3. Frazier, Charles H.: Monograph on Tumors of the Cerebrum by Mills, Spiller, Frazier and others (1906).

trum, etc.). In these deep lesions of the lenticular zone both the motor aphasia and the hemiplegia are practically complete and are of a well-known and often described type, the aphasics usually having but a single recurring utterance or one or two such utterances. Agraphia and forms of sensorial aphasia are also important features of the symptom-complex.

The following two cases, in one of which the patient was cured by operation and in the other by the intravenous administration of salvarsan, are illustrative of the types of motor aphasic and agraphic cases most amenable to surgical or salvarsan treatment.

Case 1.—*History.*—W. B., aged 37, referred to Dr. Mills by Dr. U. G. Gifford of Avondale, Pa., was admitted to the University Hospital, Dec. 9, 1911. He denied venereal disease. The patient had suffered at intervals since childhood with severe headaches. During the six years preceding his admission to the hospital these headaches had become almost continuous. During the last two years he had had epileptiform attacks every two or three months, having had seven of these seizures during the month preceding his admission. The attacks, as described by those who had witnessed them, began with the drawing up of the right arm and both legs. In them he had both tonic and clonic spasms. Consciousness was lost

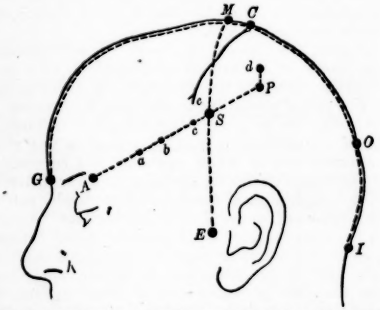

Fig. 2.—Craniocerebral guiding lines traced on a photograph of one of the casts prepared by Professor Cunningham.—(Anderson-Makins). G, glabella; I, inion; M, midsagittal point; A, external angular point; S, squamosal point; P, parietal point; E, pre-auricular point; a, commencement of fissure of Sylvius; b, bifurcation of fissure of Sylvius; d, termination of fissure of Sylvius; Ce, central fissure; O, parieto-occipital fissure; G to I is the sagittal line, A to P the squamosal and E to M the frontal.

and biting of the tongue occurred. He lost control of his anal and vesical sphincters during an attack. His speech had been failing for about one year and had gradually grown worse.

Papillo-edema was present on both sides. The patient showed decided aphasia, chiefly motor. He was inattentive, although at first he seemed to take notice of what was said to him, later appearing to become easily fatigued. When told to put his knife in the hand of the examiner he placed it in his own pocket. When given a series of letters he pronounced the first few correctly, but then seemed to lose himself or become confused and apparently did not recognize letters or numbers. This may have been due to cerebral or visual fatigue.

The patient was not object-blind, nor was he markedly word-deaf. He appeared sometimes to have difficulty in comprehending what was said to him. He was not word-blind.

When asked to spell "medicine," he spelled it correctly, but pronounced it "merchandise." He wrote his name fairly well, but when asked to write "I want to go home," he wrote, "I go go," and at another time "I want to ho." He seemed confused and threw down his pencil. He could add well, but when asked to subtract and multiply he did not do so correctly.

Dec. 16, 1911, it was noted that the patient had right partial facial paralysis. Voluntary movement, as shown by drawing the corner of the mouth up and to the right, was impossible. Emotional expression as shown in laughing was not entirely lost on the affected side. The tongue protruded toward the right, with fine tremor.

The patient greeted the doctors on making their rounds by saying "good morning," but would not say anything else. He had some apparent difficulty in comprehending what was said to him. It was almost impossible to test for sensation, sense of position, etc., because of his lack of language. Much saliva collected in his mouth, and he did not close his right eye well, but he wrinkled his forehead almost as well on the right as on the left. Ocular movements were normal. He had some weakness in the right arm and hand.

MEASUREMENTS AND OSTEOPLASTIC OPENINGS

As it is always now regarded as preferable to have openings which in some of their dimensions will be at least 3 or 4 inches, only a few lines need to be determined, but these are of much importance. They are the ectal correlatives of the central fissure, the sylvian fissure and the occipitoparietal notch. With regard to the best openings in aphaso-agraphic cases these markings are all that need to be defined on the skull, with the additional determination of the distance from the midsagittal line for the superior boundary and in some instances the determination of the line which corresponds as closely as possible to the floor of the skull.

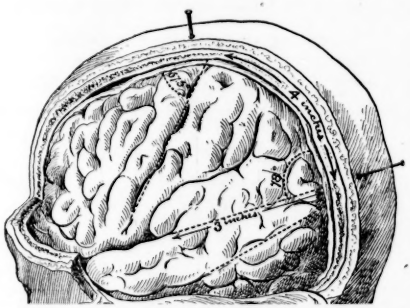

Fig. 3.—Angulation of the central, sylvian and parallel fissures.

In our experience the Anderson-Makins measurements have always been equal to the occasion (Fig. 2).

We determined on the cadaver and have shown in Figure 3 the angulation of the central, sylvian and parallel fissures.† The angulation of the central fissure to the mid-sagittal line is of course well known and it is only necessary for us to say that in our dissection, as in those of others, we found that this angulation is not always exactly 67 degrees. The angulation of the sylvian fissure is about 78 degrees and the parallel, in its greatest length at least, nearly the same.

Case 1.—*Operation.*—In Figure 4 is shown the opening which was used to uncover the tumor in Case 1. We regard this as the best exposure when a tumor or other operable lesion gives a symptom-complex in which motor aphasia and motor agraphia are the dominating features from partial destruction of the third and second frontal convolutions (Fig. 5).

After the opening had been made the intracranial pressure was marked; no pulsation was present over the middle portion of the field. When the dura had been removed a small, hard

† A series of osteoplastic cadaveric investigations to identify the relations of cranial areas to the convolutions and fissures beneath them was made by us with the assistance of Dr. Edward M. Williams. Pen sketches were made from photographs of these openings.

tumor was seen almost exactly in the middle of the opening. After the ligation of two large veins it was found that the growth could be separated from the surrounding brain tissue by the finger and scalpel handle. Great care was taken in enucleating the growth, but this enucleation was complete.

Microscopic Examination.—The growth was referred to Dr. William G. Spiller of the laboratory of neuropathology for microscopic examination, who reported that it was probably a tuberculoma, although possibly a gumma.

Postoperative History.—After the operation the patient had an uneventful surgical history. The wound promptly healed and the patient had no further attacks except one or two within forty-eight hours of the operation. At first his aphasia and agraphia were quite as marked as before the operation, but his powers of language gradually but steadily improved,

TREATMENT BY SALVARSAN AND MERCURY

One matter of much importance for both the neurologist and the surgeon to consider, in a case of focal disease of the brain, is whether the lesion which causes the focal symptoms is syphilitic, and if so whether it is amenable to constitutional rather than to surgical treatment, or whether it demands both forms of treatment. This question arises not infrequently when aphasia in some form and degree is prominent. During the time after operation when the patient in Case 1 was still under observation, another case was studied by us which

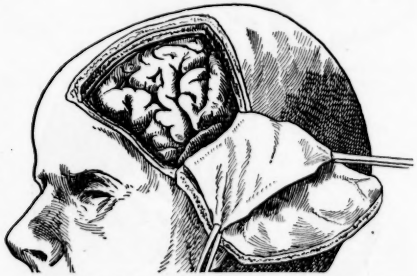

Fig. 4.—Osteoplastic opening for a tumor of the posterior extremities of the third and second frontal convolutions.

illustrated the point just presented. The patient came to us from a physician in the interior of Pennsylvania distinctly with the idea of having us determine whether medicinal treatment or operation was indicated; if the former, what the method of its administration should be, and if the latter, when the surgical procedure should be undertaken; also, of course, what the locality was of the lesion to be operated on. The patient was carefully examined, and although in some of its features the case was distinctly like the one just put on record in which operation was so successfully performed, we decided that a treatment by salvarsan and hypodermic mercurial medication was more appropriate than operative surgery. Happily the result showed that we were correct.

The reasons which determined us to favor operation in the first case were in the main the absence of a Wassermann or Noguchi reaction and the persistence of both the aphasic and paretic phenomena. Those which determined us against operation in the second case were the presence of positive Wassermann and Noguchi reactions, the paroxysmal character of the aphasic and agraphic symptoms (recurrence rather than continuance) and the absence of any increasing paresis.*

* For details of this interesting case the reader is referred to the full account in the Transactions of the Section on Surgery.

Besides the motor aphasic and motor agraphic syndrome which has been discussed and illustrated by the two cases just given, it will be found useful to recognize three other symptom-complexes which may serve the neurologist in guiding the surgeon in the selection of sites for osteoplastic operations. These syndromes are among those which in our experience have been presented in cases of operable tumor, abscess and hemorrhage, especially the former two. They are symptom-complexes representing cases which can be diagnosticated and palliated or cured by surgical procedure.

AUDITORY APHASIAS AND WERNICKE'S ZONE

Most Important Diagnostic Symptoms.—Word-deafness, complete or partial, paraphasia, partial motor aphasia.

Symptoms Sometimes Present.—Word-dumbness, paralexia, auditory apraxia, amusia, auditory hallucinations.

Symptoms from Invasion of Neighboring Parts.—Hemianopsia, loss of sense of position and passive movements, astereognosis, impairment of cutaneous sensation, hemiparesis or hemiplegia.

A lesion giving the above symptoms may be described as one chiefly located in the central portion of the anterior half or two-thirds of Wernicke's zone, which is regarded as including the supramarginal or subparietal convolution, the angular convolution, the first and second temporal convolutions, and the anterior boundary of the middle portion of the occipital lobe as repre-

Fig. 5.—The motor aphasic and agraphic zone.

Fig. 8.—Wernicke's zone.

sented in Figure 8. A tumor or other lesion thus localized and centralized will, after its effects are well defined, have for its most important symptoms word-deafness and paraphasia. Partial motor aphasia is often present but may be very partial. Word-dumbness, also usually partial, is often exhibited, and more or less alexia or paralexia because of interruption of the connections between the higher auditory and higher visual centers. The auditory phenomena will, however, be more dominant. Hemianopsia comes on in some cases as the growth advances, and if it spread so as to involve the parietal lobe and motor regions, other symptoms may be impairment of skin sensation and of sense of position and passive movement with or without hemiparesis.

It is true that cases of destructive lesion of the first left temporal convolution have been recorded which have not given word-deafness, but these are the rare exceptions and need to be accounted for in some special way. The anomia or word-deafness in lesions of this area, while often present, is not so common a phenomenon as in lesions in the middle or more inferior portion of the temporal lobe or in the region of the parietotemporo-occipital junction. Auditory apraxia or mind-deafness, the inability to recognize objects through sound, and auditory hallucinations are present in rare instances. Mind-deafness, however, in most cases seems to require bilateral destruction of the temporal zones, and hallucinations of hearing are inconstant and in absence of other diagnostic symptoms not reliable for diagnosis.

In probably one-fourth or even one-third of the cases of destructive lesions involving the auditory portion of Wernicke's zone, word-blindness and alexia are absent, although there may be partial word-blindness and alexia, and frequently paralexia. The power to write spontaneously or from copy may be retained. Writing from dictation will of course be lost if word-deafness is complete or nearly complete.

The opening to be preferred to uncover the anterior two-thirds of Wernicke's zone in the first temporal convolution is that indicated in Figure 9. The lower border of this opening extends from a point slightly posterior to the line from the midsagittal point to the preauricular point at a level of one-half inch above the top line of the zygoma, backward for about 3¾ inches. The anterior border of the opening reaches from the anterior end of the lower limiting line upward for about 4 inches. The superior line is drawn from the upper extremity of the anterior boundary backward for about

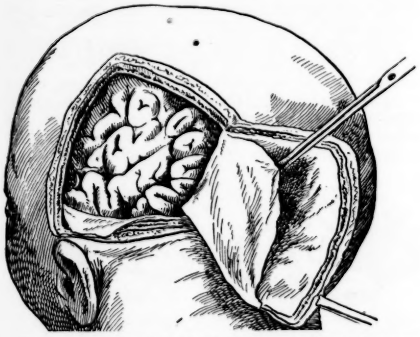

Fig. 9.—To uncover the anterior two-thirds of Wernicke's zone.

Fig. 10.—Auditory aphasic zone.

Fig. 11.—Midtemporal aphasic zone.

3½ inches. The line of breakage is thus formed at the anterior margin of the occipital region, being about 1½ to 2 inches in length. This opening will thoroughly expose the subparietal and posterior halves of the first and second temporal convolutions, as shown in Figure 10. The opening might be made with the line of breakage below or even above, but we believe it will be found most desirable to place it posteriorly as indicated in the figure and description, this from the standpoint both of convenience and of blood-supply to the flap.

ANOMIA AND THE MIDTEMPORAL REGION

Most Important Diagnostic Phenomena. — Anomia (visual or for all senses), paraphasia, paralexia, paragraphia, partial motor aphasia.

Symptoms Sometimes Present.—Hemianopsia, color aphasia (color dissociation), mind-blindness (visual apraxia), partial word-deafness (auditory apraxia), visual or auditory hallucinations.

Symptoms from Invasion of Neighboring Parts.—Word-deafness, partial word-blindness, letter-blindness, or number-blindness, hemiparesis.

The dominant feature in such a symptom-complex is anomia, or if the lesion is incompletely destructive, paranomia. This syndrome is based on the theory, which is held by us, that in the general zone of speech is situated a concept area intercalated between the sensory percept regions, auditory and visual, and the cortical motor centers for speech and writing, namely, Broca's convolution and the posterior half of the second frontal convolution. Within this area for concrete concepts is a centralized portion which has for its function the registering of the names of objects recognized. Cases are reported, for instance by Potts,[4] in which immediately after an acute apoplectic lesion, probably hemorrhage, the patient lost entirely the ability to name objects which he fully recognized either through sight, hearing, touch, taste or smell.

The mistake must not be made of supposing that anomia does not occur from lesions differently situated.

Fig. 12.—Osteoplastic opening to reach the midtemporal conceptaphasic zone.

It may be present as the result of bilateral lesions of the occipital lobe, the lesions of Wernicke's zone, cortical or subcortical, in motor aphasia, and in various aphasic complexes. The word-dumbness is indicative of a somewhat isolated midtemporal lesion only when it presents the peculiar diagnostic symptomatology which has been described in the summary at the beginning of the remarks on this region.

Abscesses of the temporal lobe associated with disease of the middle ear not infrequently give the symptom-complex of the midtemporal region, although symptoms of Wernicke's zone or of the angulo-occipital region may be present when the abscess has notably extended.

Oppenheim,[6] in discussing anomia or word-dumbness under Freund's title of "visual aphasia," says that this visual or optic aphasia is usually associated with alexia, hemianopsia and often with sensory aphasia, but in one case he could discover no trace of word-deafness.

4. Potts, C. S.: THE JOURNAL A. M. A., May 4, 1901, p. 1239.
6. Oppenheim: Text-Book of Nervous Diseases, transl. by Bruce, 1911.

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OSTEOPLASTIC OPENING TO MIDTEMPORAL REGION

This third opening is made with the inferior line running parallel to the zygoma and about one-half inch above it, extending from 2 fingerbreadths behind the external angular process, backward to a line through the mastoid process. The superior line, parallel to the sylvian fissure, runs forward and backward sufficiently far to intersect perpendiculars from the posterior and anterior ends of the inferior line. The breakage here is made on the superior line and the flap turned upward, as shown in Figure 12.

VISUAL APHASIAS AND THE ANGULO-OCCIPITAL REGION

Most Important Diagnostic Symptoms.—Word-blindness, letter- and number-blindness, alexia, visual agraphia, lateral homonymous anopsia or hemianopsia.

Symptoms Sometimes Present.—Word-dumbness, visual apraxia, color aphasia (color dissociation), visual hallucinations, paraphasia, inability to copy from sight.

Symptoms from Invasion of Neighboring Parts.—Loss of sense of position and passive movements, astereognosis, impairment of skin sensibility, word-deafness, partial or complete, inability to copy from dictation.

Fig. 13.—The visuo-aphasic angulo-occipital zone.

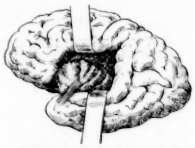

Fig. 15.—External relation of the lenticular zone, the operculum being retracted to show the insula.

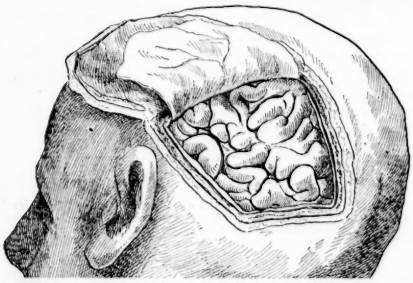

Fig. 14.—Osteoplastic flap to uncover the angulo-occipital region.

The aphasic symptoms of a lesion in this region (Figure 13) will be dominatingly visuo-aphasic. These will be in the first place word-blindness, usually both cortical and subcortical, letter-blindness and number-blindness, alexia, visual agraphia, lateral homonymous quadrant anopsia or hemianopsia. In making this statement we accept the view that the anterior portion of this angulo-occipital area is preeminently the site of the cortical functions of word-seeing, letter-seeing and number-seeing. The hemianopsia of course results when the lesion invades deeply enough to involve the optic radiation of Gratiolet. Word-dumbness is frequently present, though usually partial. Mind-blindness like mind-deafness most frequently results from bilateral lesions, and scarcely ever shows itself in complete form except when both sides of the brain are implicated. Inability to copy of course goes with the alexia except in the rare instances of subcortical tumors in which the cortex of the angular region is not destroyed. In such cases the patient occasionally can write, but his eyes once removed from the page cannot, when returned, recognize what he has written.

Among the interesting symptoms of lesion extending into the occipital lobe from the angular region are those of color disturbance, especially color amnesia or color dissociation. Wildbrand, Lewandowsky[7] and Spiller[8] have described interesting examples of these unusual occipital symptoms.

ANGULO-OCCIPITAL OSTEOPLASTIC OPENING

The surgeon in operating on the angulo-occipital region must keep in mind the peculiar shape of the skull as it approaches the occipital pole, the position of the great sinuses and the best places for breakage of the flap. The most approved opening to uncover the angular gyre and lateral occipital lobe as low as possible is, we believe, that shown in Figure 14. As here shown, the breakage is made to take place at the anterior limit of the opening. Objection may be made that the opening is larger here than at the posterior boundary and about the same size or nearly the same size as at the superior or inferior line. This method of breakage, however, gives the best opening if the surgeon finds that it may be necessary to extend it somewhat inferiorly or posteriorly. One of the doubts sometimes present when an angulo-occipital tumor is diagnosticated is as to how far it is lateral and how far inferior in location, and some opportunity of demonstrating this by exploration is left when the inferior and posterior borders of the opening can be slightly enlarged. Blood-supply is not insufficient wherever the line of breakage may be chosen. It is probably somewhat better when it is placed below. A shorter line of breakage is obtained when this is chosen posteriorly, but it is not difficult for a surgeon experienced with work of this kind to break the skull for any length, especially if he assists in doing this by weakening the flap by means of the Gigli saw. If the short line of breakage is made posteriorly behind the lambdoidal suture the flap may tend to break at this suture and this

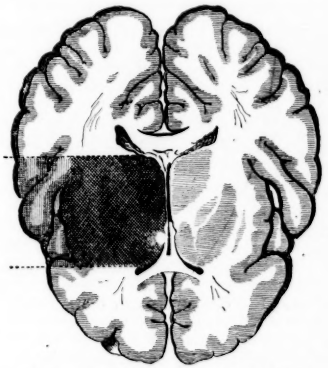

Fig. 16.—Horizontal section of the brain showing deep-seated structures of the lenticular zone on the left corresponding to the shaded area on the right.

7. Lewandowsky: Monatschr. f. Psychiat. u. Neurol., 1908, xxiii; cited by Spiller.
8. Spiller, W. G.: THE JOURNAL A. M. A., Dec. 18, 1909, p 2078.

may cause slight delay and necessitate a second breaking farther back. The opening here described and shown has the angular convolution nearly in its center.

INOPERABLE TUMORS IN APHASIC CASES

Certain aphaso-agraphic cases, especially of tumor, are clearly inoperable. In these the lesion is deep-seated, either in the angulo-occipital region, Wernicke's zone, or the lenticular zone (Figs. 15 and 16). The question of diagnosis is simply one of separating a deep and destructive subcortical from a compressing and penetrating membranocortical lesion. As many cases of aphasia are due to deep-seated lesions of the lenticular zone, it is well to bear in mind the pathognomonic phenomena of such lesions. These are the completeness of the accompanying hemiplegia with such phenomena as indicate clear involvement of the capsules, internal and external, the claustrum and basal ganglia.

THE NEED FOR GENETIC STUDIES OF PULMONARY TUBERCULOSIS

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Close acquaintance with a particular family characterized by extensive pulmonary tuberculosis has long impressed me with the significance of the hereditary aspect of this disease. The possible importance of a hereditary factor in its propagation, it would seem, should receive more earnest attention than has yet been accorded to it by antituberculosis workers in this country. In an attempt to approach the problem from the genetic point of view I have secured the cooperation of a former student, Dr. Lewis Booker of the North Carolina Tuberculosis Sanatorium at Montrose, who has kindly undertaken the collection of pedigrees in that institution. To date, twelve such histories have been secured as fully as was possible or seemed practicable, but only three of these [Charts 1, 2 and 3] are sufficiently complete to warrant tentative deductions. In the remainder, great difficulty and uncertainty were experienced in attempting to get grandparental and collateral histories; in a number of instances it was quite impossible to get any data respecting these relationships.

Pedigree Chart 1 shows a four-generation history of pulmonary tuberculosis. Both great-grandparents had phthisis. The criticism has been made, in general, that at that early time, when this pair lived, diagnosis was crude and uncertain. I would oppose that because, while probably many mild or obscure cases escaped detection, cases that were recognized as phthisical were undoubtedly such. Consequently tuberculous pedigrees probably never err on the side of showing too great incidence. With our present highly refined and very accurate methods of detecting tuberculous infection the assumed obstacle to conclusive findings is obviated for all future time; and this improved condition emphasizes the importance of beginning extensive genetic studies by trained medical men, especially in sanatoriums, at once.

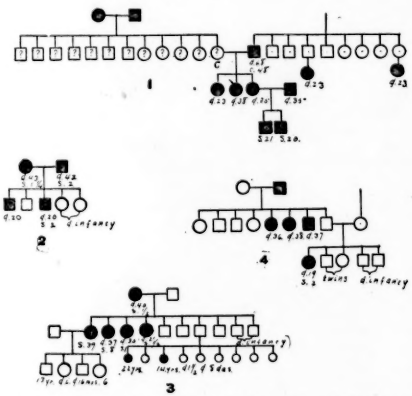
No information could be obtained regarding the mother (C) of the second generation, or of any member of her fraternity. Regarding her as probably tuberculous, a fair inference in view of her ancestry and her progeny, the chart shows a double tuberculous mating, resulting in a tuberculous fraternity of three. The last fraternity, all tuberculous, is again the result of a double affected mating. Barring the single inferential tuberculous individual (C) mentioned, this pedigree strongly suggests the circumstance of grave eugenic significance, namely, that double tuberculous matings produce only tuberculous offspring.

This pedigree indicates also the recessive nature of the assumed tuberculosis factor. It further suggests that hereditary tuberculosis is the result of the absence of something (factor; determiner) in the constitution or germ-plasm, entailing most likely a lack of resistance or a susceptibility to infection.

Chart 2 gives a second fraternity of a double tuberculous mating. It also shows a relatively heavy tuberculous incidence, varying in degree according to the interpretation placed on the infant deaths recorded.

Chart 3 gives a three-generation history of tuberculosis in which only one of the individuals in the several matings was said to have been tuberculous. The incidence of tuberculosis and infant mortality is again relatively heavy.

Chart 4 is very similar and again strongly suggests the risk entailed in tuberculous matings, even where



Charts 1, 2, 3 and 4.—Pedigrees showing influence of heredity in tuberculosis; circle indicates female, and square, male; solid black squares or circles indicate tuberculous persons; *d*, died at age indicated; *s*, sick for period indicated; *c*, cured for period indicated.

one of the parents is apparently normal. The F generation approximates closely an R R by D R cross (assuming the tuberculous tendency to be recessive to the normal) as does also the corresponding fraternity in Chart 3. Normals can be certainly designated as such only on the basis of a knowledge of their ancestry. Many so-called "normals" may still carry the latent tuberculosis factor which may come to reassert itself in future generations.

The objection can be justly urged that it was impossible here to estimate accurately the relative weight of infection, including virility, size and frequency of dose. It is true that in no case are the conditions of home life fully known to us. This simply serves to emphasize the importance of accurately controlling and evaluating the environmental factors in the future work urged along this line. Professor Karl Pearson's biometrical studies of phthisis, however, cogently indicate that infection is a secondary factor in tuberculosis morbidity.

The position I desire to maintain is this: An almost unanimous doubt seems to exist regarding the importance

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of heredity in tuberculosis. Such pedigrees as are available suggest the operation and significance of a genetic factor. The evidence is as yet too meager and of too uncertain indication to warrant very extensive or drastic action along the lines suggested. The effort for the collection of as many and as complete pedigrees as is now possible should be made country-wide; and a plan should be formulated at once by medical bodies for the complete collection and proper recording and preservation of all tuberculosis histories, at least of sanatorium patients, and provision made for following up the posterity of these particular strains. The initiation of such a plan would be of inestimable service to future generations, whatever the final result. If study of these numerous and reasonably complete pedigrees several centuries hence showed that heredity is negligible in our war against tuberculosis, then efforts can be wholeheartedly redoubled for its eradication along euthenic lines. If heredity appeared significant, then future efforts must be shaped, at least in part, along eugenic lines, and procreative restrictions placed on defectives in accordance with the hereditary principles adduced.

Because of the universal deference paid the physician and the consequent great influence he wields, the best interests of the nation require that he take the initiative in genetic studies of human pathologic conditions and in a eugenic propaganda with respect to their eradication. Little can be accomplished, and that little but very slowly, without the help of the physicians. Moreover, non-medical eugenic investigations need the guiding counsel of the scientific portion of the medical profession. Eugenic research of disease to be most effective requires a medical outlook, or at least, intelligent and sympathetic medical criticism.

In 1911 approximately $15,000,000 was expended in antituberculosis efforts. It is estimated that there are from 200,000 to 300,000 consumptives who cannot afford and who cannot get proper hospital attention. To rectify this alarming condition it is estimated that an annual expenditure of from $50,000,000 to $100,000,000 is needed.[1] This sum will undoubtedly be forthcoming. But $15,000,000 is an enormous annual expenditure; an expense sustained by the population at large. It would seem that the people who pay have a right to demand that in the expenditure of these vast sums something permanent be accomplished. Are the efforts now being made against tuberculosis effective in eradicating the disease? There is as yet no sign of a striking diminution. Perhaps it is not just to render judgment so early. Moreover, when one considers that about one in seven still dies of tuberculosis, and that the annual loss from sickness and death due to tuberculosis is estimated to be from $200,000,000 to $300,000,000,[2] the expenditure of vast sums of money even for temporary alleviation is amply justified. But it seems only fair to insist that while this money is being spent for tuberculosis work, a portion be devoted to a study of the problem of the ultimate eradication of the disease.

In the case of venereal disease, for example, the course to be pursued in an eradicating process would seem to be simply isolation of infected patients. It is a matter here of simply controlling the source of infection. But is the problem of the eradication of tuberculosis similarly simple? Present efforts at prevention seem to take for granted that it is. We hear only of sanatorium and hospital treatment. Will tuberculosis be quantitatively reduced thereby? This seems doubtful; a fairly uniform amount will probably always remain for similar treatment under present conditions. We are probably dealing here with something more fundamental than mere infection, and the size and virility of the dose.

The work of Karl Pearson[3] indicates most forcibly that hereditary constitutional predisposition is fundamentally concerned. Hamburger[4] found that in Vienna 95 per cent. of the children of the poor between twelve and thirteen years were infected with tubercle bacilli; and he estimates that among the poor possibly all are infected by the time of puberty. This can only mean that the tuberculous of later years are those who were unsuccessful in resisting the infantile attack. The constitution was at fault. Sanatorium treatment takes small account of this fact. The principle here is that infection is the all-important matter, heredity negligible. But sanatorium treatment under present conditions certainly cures in only a modicum of cases. Relapses frequently occur. All that seems to be accomplished in many instances is a prolongation of life, frequently resulting in the propagation of more of the non-resistant type. The cause for this condition may perhaps lie very largely in the fact that for lack of money on the part of the patient and lack of accommodations on the part of the sanatoriums, patients cannot remain under treatment a sufficiently long period of time. These conditions when present should be speedily remedied by the several states assuming control and financial responsibility. Certainly the present generation of tuberculous stock should be cared for as generously and as comfortably as is possible. But society should have a care lest by its possibly short-sighted charity it lay up unbearable burdens for posterity. The eradication of tuberculosis seems at base a problem of establishing a resistant race.

Studies in genetics to date indicate very strongly that heredity is fundamentally the important factor, since infection is inevitable. The warning should receive more intelligent heed from antituberculosis workers. At any rate the nation should insist that a part of its contribution be devoted to a searching investigation of the question of tuberculosis from every aspect so as to make certain that we are not simply deceiving ourselves into thinking that we are curing a great ill when we are augmenting it, and spending large sums in doing so.

I submit that if the present workers against tuberculosis are not yet impressed with the significance of tuberculous family histories, they owe it to the public to state scientific reason for their skepticism, and establish proof that the present method of dealing with the "white plague" will bring the final eradication, not simply temporary alleviation. State control would naturally be followed by legal restrictions against the intermarriage of the tuberculous. This point of view does not minimize the importance of the environment. It presupposes an ideal environment — but with the ubiquitous tubercle bacillus. As long as the environment remains in many quarters unfavorable and dangerous to the public health, efforts should primarily be directed toward improvement. But while this is in process of accomplishment, it would seem well-advised, in view of tuberculous family histories, at least to give warning of the racial danger of the intermarriage of the tuberculous. This would unquestionably aid both in the numerical decrease of non-resistant constitutions and the lessening of sources of infection.

1. Survey, 1912, xxvii, 16.
2. Lee, F. S.: Scientific Features of Modern Medicine, p. 122, Columbia University Press, 1912.
3. The Fight Against Tuberculosis and the Death-Rate from Phthisis, London, Dulau & Co., 1911.
4. Koplik, H.: Bull. Johns Hopkins Hosp., 1912, xxiii, 254.

PSORIASIS

THE VALUE OF BATHS AND OF MACERATION IN ITS TREATMENT

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SAN FRANCISCO

The skin may be regarded as an enormous gland enveloping the body and presenting its excreting surface to the atmosphere. This large glandular surface is covered by a horny protecting plate that is the excreting surface in action, as it is being continually renewed from below, and cast off as the scurf layer of the free surface. The hair and nails are also excrements, and in the old physiologies used to be so called. The chief constituent excreted by this gland is fat; horn fat when it falls off as the scurf layer, and semisolid or liquid fat when excreted by the sebaceous glands. The sudoriferous glands also excrete much fat, as well as water and salts.

Water has a powerful influence on this immense cutaneous surface. For instance, moist heat and warm water are the best means of securing drainage of this huge gland. Moist heat may be applied, as through steam baths, warm baths, wet packs and poultices. In fact, the skin may be made to furnish its own poultice by enveloping it in an impermeable covering that imprisons the warm water furnished as sweat. The sweat is thus turned back on the outer layers of the skin, softening and loosening them. When moist warmth is applied for a long time, the skin becomes white, wrinkled and sodden, and the upper epidermal layers may be scraped off as a milky mush. When the maceration is carried still further, the whole horny layer may be lifted off in sheets exposing the pink, tender quick. This is "the washerwoman's hand skin" that used, in old medical literature, to receive so much attention as illustrative of the action of poultices in inflammation. In many diseases of the skin this maceration, exsanguination and peeling may be employed with advantage, and in this paper the advantages incident to the treatment of psoriasis will be discussed.

BATHS IN THE TREATMENT OF PSORIASIS

Leo von Zumbusch in an excellent summary of the treatment of psoriasis says that water is the oldest and most effective mechanical means we possess, and that without baths psoriasis is a most difficult disease to manage.[1] L. Brocq also remarks that there can be no serious treatment of psoriasis without baths.

All cases of psoriasis except those complicated with eczema may be advantageously treated with baths. When eczema is present, the impossibility of employing baths constitutes a decided impediment. On the contrary, those cases of psoriasis characterized by an acute and wide-spread outburst of small lesions on a skin full of blood and prone to factitious urticaria, in which there sometimes is a rise of temperature, do particularly well with warm baths.

Cold baths I have long thought harmful; sea baths, when they are cold, are probably not nearly so beneficial as ordinary warm baths. There are other elements, however, that enter into sea bathing, such as change of climate, the toning up of the general system in the fresh sea air, and the action of light on the skin. Light itself is a powerful aid in the treatment of psoriasis, and it is supposed that it is through its protective action that psoriasis so infrequently affects the exposed skin of the face and hands. Leo von Zumbusch mentions Britschew,[2] Guhr,[3] and J. Nevins Hyde[4] as holding that light acts favorably on psoriasis. He himself, however, draws attention to the fact that the irritation caused by light may influence psoriasis most unfavorably and cause the eruption to increase most rapidly. Both its favorable and its unfavorable action, therefore, show the influence of light on the disease.

THE DURATION OF THE BATH

As maceration and the drainage of the skin is of the first importance in the treatment of psoriasis, the longer the bath, the better the effect. Observing this, some have employed prolonged baths of an hour or more, or continuous baths. These have many disadvantages. In the first place, a strong, able-bodied patient, busy with his work, will not devote the necessary time, while others cannot stand the prolonged or continuous bath without detriment to their general health.

THE USE OF DETERGENTS

As an efficient aid to the cleansing effect of the bath in removing the scales, detergents such as soap, stiff nail-brushes or pumice-stone are used. The best soap is ordinary green soap, as it is an excellent detergent, and can easily be rubbed into the patches while the patient is in the bath. It is most effective when used with an ordinary nail-brush. As in a psoriasis patch the papillæ with their capillary loops are very near the surface, the brushing easily causes bleeding. The patient may be told that this does no harm, and is even advantageous, as reducing congestion, and as the salves usually employed after a bath act as antiseptics, there is no fear of infection.

Pumice-stone acts admirably as a detergent through its well-known effect of grinding off the epithelium.

Judgment must be used in the employment of detergents, as in acute or irritable cases they may do harm. It is well known that even a scratch on the skin, at some stages of the disease, will be followed by an eruption, and under such conditions while drainage of the skin is of the greatest benefit, as calming the inflammatory process, strong irritants only aggravate the condition.

MEDICINAL BATHS

Mineral waters or baths that have minerals or other medicaments added to them are often recommended. As above mentioned, sea bathing is esteemed by some; others add salt to the bath, and natural sulphur and arsenic springs are held to be valuable, although it is doubtful if either are more efficacious than a simple bath. An artificial sulphur bath is made by adding 80 to 100 gm. or less of potassium sulphid to a bath. Audry of Toulouse advises using even less rather than more, as the sulphur is apt to irritate, and for the same reason the patient should not remain in such a bath more than fifteen minutes, and it should not be too hot; it should be below 30 C.[5] Because of their liability to cause sulphur dermatitis, sulphur baths should not be taken every day, and it is very often advantageous to give a soothing bran bath on intervening days. Besides being irritating, the sulphur baths have other disadvantages; they have an unpleasant smell and blacken metal bath-tubs.

1. Von Zumbusch, Leo: Psoriasis, Prakt. Ergebn. a. d. Geb. der Haut- u. Geschlechtskr., ii, 596.

2. Britschew: Ein Fall von Psoriasis vulgaris mit Lichtbädern behandelt, Jour. russe de mal. cut., 1904, viii.

3. Guhr: Heliotherapie der Psoriasis, Berl. klin. Wchnschr., 1906, No. 17.

4. Hyde, J. Nevins: The Influence of Light Hunger in the Production of Psoriasis, Brit. Med. Jour., Oct. 6, 1901, p. 833.

5. Audry, C., Durand, M. and Nicholas, J.: Traitement des maladies cutanées et vénériennes, p. 11.

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It is supposed by some that the arsenic of natural arsenical waters may be absorbed, and so act medicinally.

I wish here to draw especial attention to potassium permanganate baths, which seem to me to act admirably, especially in acute universal psoriasis. Two tablespoonfuls of a saturated solution of potassium permanganate are added to a warm bath. After soaking in this for about ten or fifteen minutes the patient thoroughly dries himself, and applies Boeck's paste, to which is added 10 per cent. of liquor picis carbonis.[6] Tar baths are also excellent, and may be conveniently prepared by adding one or two glasses (8 or 16 ounces) of an emulsion of coal-tar to a warm bath. When tar is used, however, it is often better to incorporate it in a salve and rub it in after a bath.

Bicarbonate or biborate of soda or boric acid, or common salt, or sea salt are often recommended to be added to baths given for psoriasis, but in doing so one must not forget that water itself acts most profoundly on the skin, and that much of its action is due to osmosis. The more hypotonic the bath is the more osmotic it will be, and the more actively it will affect animal cells with which it comes in contact. By the addition, for example, of 0.9 per cent. of common salt to water a solution is produced which is perfectly isotonic with the blood-plasma and therefore isosmotic and likewise less active. Other salts and animal substances by increasing the specific gravity necessarily decrease the osmosis, and therefore the soaking power of water. It is now ascertained that pure water when brought into contact with animal cells powerfully induces them to give up their products of retrograde metabolism, and this may also have its effect in a disease like psoriasis, which, there are many reasons to believe is due to some metabolic error.

MACERATION BY IMPERMEABLE COVERINGS

Maceration by enveloping the part in an impermeable dressing, retaining the sweat and heat of the skin, and so making this function of the skin react on itself, is an old and powerful remedy.

The most amusing instance of maceration in my experience occurred in a burly, self-indulgent coachman, with a splendidly developed muscular system. It is astonishing how frequently patients with psoriasis have these fine muscles; it is an old observation that psoriasis occurs among the well nourished, and that among the well nourished the lesions are most obstinate. This man had a psoriasis of the soles that defied every means employed against it. One day he turned up showing as fine a pair of soles as I have ever seen, and gave the following account of himself:

While hosing down carriages he wore a pair of rubber boots. After finishing his work he went out to get a drink, and one led to another till he ended in a glorious spree, and remained in that blissful state for one entire week. During the whole of this time he did not once remove his rubber boots. When he finally sobered up, and pulled off his boots, the whole macerated outer epithelial covering came off too, leaving his feet as soft and tender as a baby's. He did not tell me what he did with those boots.

F. von Hebra was the first to employ this form of maceration, which is often brilliantly effective. He had special bags, mits, or socks made of rubber for different parts of the body or limbs, and even whole garments to envelop the entire body. The principle may be employed to intensify the action of other topical agents. Lately an excellent result was obtained in a pair of obstinate old patches by applying Dreuw's paste, and covering it with oiled silk fixed in place with adhesive plaster.[7] Often the part may be enveloped in cloths wet with Hutchinson's lotion, diluted a dram to a pint and then covered with oil silk, and bandaged in place. This dressing may be allowed to remain all night.[8]

There are a number of other substances that when painted on the skin dry down into an impermeable coating, such as gutta percha dissolved in chloroform, flexible collodion, and the zinc oxid glycerin jellies. Adhesive and other plasters may also be used for the same purpose.

CONCLUSIONS

Baths of pure warm water act powerfully and beneficently on psoriasis. Sulphur baths made by the addition of potassium sulphid may act badly, especially when the skin is in an erethic, irritable condition. Tar, and I think, permanganate of potash, are often valuable additions to baths given for psoriasis. The addition of the blander salts, such as bicarbonate of soda, boracic acid and common salt probably decrease the effect of the bath by rendering the water less osmotic. Maceration under impermeable coverings acts in much the same way as baths.

323 Geary Street.

6. Boeck's paste consists of:

℞		
	Amyli	
	Talci	āā 40 parts
	Glycerini	20 parts
	Gummi arab.	1 part
	Liq. plumbi subacet.	4 parts
	Aq.	200 parts

M. Sig. Use as a lotion.

Although this is called a paste, it makes a lotion, and one to which a solution of coal-tar can advantageously be added. Druggists are used to boiling starch and glycerin, when they are dispensed together, to make a glycerole of starch. They should be especially warned not to do so in this case. The solution of coal-tar is official in the British Pharmacopeia as liquor picis carbonis. Its formula and method of preparation are as follows:

Prepared coal-tar	2 parts
Quillaia bark, in No. 20 powder	1 part
Alcohol (90 per cent.)	a sufficient quantity

Moisten the powdered quillaia bark with one fluidounce (or 50 c.c.) of the alcohol, and complete the percolation process with the remainder of the alcohol as for tinctures, one pint (or 1,000 c.c.) being produced. To the resulting percolate add the prepared coal-tar, and digest the mixture at 120 F. (48.9 C.) for two days, occasionally stirring. Cool and decant, or filter.

7. Dreuw's paste consists of:

℞		
	Acid. salicyl.	10 parts
	Chrysarobini	
	Ol. rusci	āā 20 parts
	Sapo. virid.	
	Lanolin	āā 25 parts

We have found this combination very effective.

8. Hutchinson's lotion consists of:

℞		
	Liq. plumbi subacetat.	20 parts
	Liq. pic. carbonis.	100 parts

Insanity in England.—In England and Wales, according to the sixty-sixth annual report of the Commission of Lunacy, there were 135,661 certified insane persons under treatment Jan. 1, 1912, which was 2,504 more than on January 1 of the previous year. The average annual increase for the ten years ended Dec. 31, 1911, was 2,495. The pauper insane decreased 2 per cent., but there were increases in all other groups of insane persons. Of the total number 91 per cent. were paupers. Of the total number of insane persons on the date named 46.5 per cent. were males and 53.5 per cent. females. An insane heredity accounted for 59 per cent. of females and 41 per cent. of males. In families with an alcoholic family history the proportion of females was 53; when alcoholism was the cause of the insanity the proportion of males to females was 68 to 32. In England and Wales the average net weekly cost of maintenance in county and borough asylums was $2.43 and $2.69, respectively. Of the criminal insane there was an increase of 3 per cent. among the men and 1.9 per cent. among the women during the year.

PROTEIN METABOLISM IN LATE PREGNANCY AND THE PUERPERIUM *

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AND
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This work was undertaken with a view of studying the metabolism in the last month of pregnancy and determining the value of changes shown by the partition of the nitrogen of the urine, as an index to the pre-eclamptic or the eclamptic state.

There has been tendency during the past few years to associate more closely the conditions known as pernicious vomiting of pregnancy occurring in the early months, toxemia of the middle period and eclampsia at or near term.[1] A similar condition of liver necrosis has been found to exist in some cases of each of these conditions, and this has given rise to the theory that the symptoms are due to faulty metabolism. It is thought that the liver is unable properly to transform the nitrogenous bodies delivered to it by the portal circulation.

This theory has obtained so firm a foothold that to-day many obstetricians consider it an additional reason why chloroform should not be used as an anesthetic and its use limited in normal labor, for it has been shown that this drug produces a degeneration of the liver-cells and therefore might prove to be synergistic to a condition of toxemia which is already present, but the symptoms of which are latent.[2]

If eclampsia is due to changes of protein metabolism, the fact should be demonstrated by examination of the divided nitrogen of the urine and such partitions should offer the most certain forewarnings of impending convulsions. Many believe that the nitrogen partition does offer just such an index, and accept a high percentage of ammonia or of rest nitrogen as evidence of serious disorder. When present with vomiting in the early months an increase of the ammonia nitrogen to 10 per cent. of the total nitrogen has been accepted by some as an indication to empty the uterus.[3]

We wish to call attention to the fact that high ammonia and high amino-acid does not prove an alteration in the metabolism even if the urine which furnishes the high amounts is acid at the time of the examination. It is possible, too, that partitions of the nitrogen after a series of convulsions may give entirely different results than before the attack began.[4] We shall present facts concerning the normal limits of the divided nitrogens in the last month of pregnancy and show what little reliance may be placed on single determinations as an indication of the pathologic conditions.

METHODS

In the course of this study we have examined the urines of normal women, of preeclamptics and of eclamptics.

The urines were collected for twenty-four-hour periods. They were placed in large bottles containing 10 c.c. of 10 per cent. thymol in chloroform and left in a cool place either in the ice-box or out of doors (in the winter months). The collection was made with the greatest care possible and a number of the cases were under the immediate care of one nurse.

As soon as the urine was received at the laboratory the acidity and the gravity were taken and albumin tests were made. It was then diluted to 2,000 c.c. with distilled water. The ammonia was estimated by the Folin method, running the air stream from seven to sixteen hours. The creatinin was determined by the colorimeter and the creatin was ascertained by a slight modification of the Folin method. The urine was then stored in the ice-box, and usually not later than the second or third day the total nitrogen was determined by the Kjeldahl and the urea by the Benedict methods. The amino-acid or, more properly, the "formol-titrating" bodies, were determined directly in all but two cases by the new method of Henriques and Sörensen;[5] in these two (Cases 5 and 8) by a new method devised by Benedict and Murlin.[6] The purin nitrogen was determined by a modification of the Walker Hall method[7] which consists of the absolute determination of the nitrogen in the silver purin precipitated. The details of the method will be published shortly.

PHYSIOLOGIC SIGNIFICANCE OF THE DIFFERENT NITROGEN FRACTIONS

Urea.—Two conditions[8] are known to reduce the amount of urea below the normal: (1) acidosis, which calls for ammonia to neutralize acid bodies formed in metabolism or otherwise introduced into the body, and (2) retention of nitrogenous materials for growth of the body as a whole, or for growth of some part normally or pathologically. In the dog it has been shown that the growth of the fetus, uterus, mammaries, etc., is sufficient in the last weeks of pregnancy to show an appreciable effect on the absolute and relative amounts of nitrogen appearing as urea in the urine,[9] and there is every reason to believe that a careful balance of the total intake and total output of nitrogen together with determinations of the urea would show the same thing in pregnant women. Many satisfactory balance studies have been made,[10] but nobody has yet combined the two. What we wish to insist on, however, is that low urea at such a time is not an untoward sign. In fact, it is just what is to be expected; for the studies on the dog referred to above have shown that it is that portion of the nitrogen which would have been excreted in the urine as urea that is especially retained for formation of the fetal tissues. When the urea is low, both absolutely and relatively, as in late pregnancy, convalescence, etc., the other nitrogen fractions, which tend to remain constant in the absolute sense under all conditions, are necessarily higher in the relative sense.[11]

Ammonia.—This fraction is always present in the urine for the purpose of neutralizing the acids which are formed in the oxidative processes of the body. For example, sulphur is oxidized to sulphuric acid and

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1. See Ewing (Am. Jour. Med. Sc., 1910, cxxxix, 828) for review of the literature.
2. Cragin and Hull: THE JOURNAL A. M. A., Jan. 7, 1911, p. 5. Howland and Richards: Jour. Exper. Med., 1909, xi, 344.
3. Williams, J. W.: Bull. Johns Hopkins Hosp., 1906, xvii, 71.
4. Zweifel: Arch. f. Gynäk., 1904, lxxii, 1; lxxvi, 536.
5. Henriques and Sörensen: Ztschr. f. physiol. Chem., 1910, lxiv, 120.
6. Benedict and Murlin: Proc. Soc. Exper. Biol. and Med., 1912.
7. Hall, I. Walker: The Purin Bodies of Foodstuffs, 1903, p. 149.
8. We are excluding conditions of extreme degeneration of the liver. See Ostwald (Lehrbuch. d. Chem. Path., 1907, p. 147).
9. Murlin: Am. Jour. Physiol., 1911, xxviii, 422.
10. Zacharjewsky: Ztschr. f. Biol., 1894, xxx, 368. Siemens: Bull. Johns Hopkins Hosp., 1904, xii, 121. Hahl: Arch. f. Gynäk., 1905, lxxv, 31. Bar: Leçons de path. obstet., 1907, ii, 243. Hoffström: Skandin. Arch. f. Physiol., 1910, xxiii, 326.
11. In the dog a similar relationship exists as regards the sulphur fractions, and in the work of Hoffström cited above is found confirmation of it for women.

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phosphorus to phosphoric acid. If there is sufficient alkali furnished by the ash of the food, very little ammonia is required to render these acids harmless; but in so simple a change in the diet as substitution of potato-starch by rice, Sherman and Gettler[12] have shown recently that the ammonia increases in the urine from 0.1 gm. to 0.15 gm., because rice furnishes a more acid ash. Janney,[13] on the other hand, has been able to drive the ammonia out of the urine almost completely by administration of sodium bicarbonate with the food. In diabetes in which the imperfect combustion of fat leads to the production of acid bodies, the ammonia rises very high, and in starvation the same sort of change, though not to so great a degree, takes place. Finally, we may mention catharsis as another cause of *high ammonia percentages*. For example, with Case 2, catharsis and irrigation of the colon on the twelfth day of our observations caused so great a reduction in the amount of food absorbed and metabolized that the urea fell from 9 gm. to 4.5 gm. The ammonia was 0.57 gm. and 0.58 gm., respectively, but rose in percentage of the total nitrogen from 9.8 per cent. to 17.3 per cent. How many of the so-called high ammonias which have been thought sufficiently grave to indicate emptying of the uterus have been obtained after catharsis?

Creatinin.—Folin was the first to show that this nitrogen-containing body is the most constant in amount for any given individual of any of the nitrogenous constituents of the urine. On a meat-free diet the absolute daily output is found to be proportional to the muscular development of the individual.[14]

Creatin.—It is generally conceded to-day that creatin in the urine of an adult on a meat-free diet, means undernutrition, i. e., undernutrition as regards energy-producing constituents of the diet, especially carbohydrates, or destruction of muscle.[15]

Purin Nitrogen.—The purin bodies are end-products of the metabolism of nucleoprotein. It is usual to separate the purin bases, xanthin, hypoxanthin, adenin and guanin from uric acid, but the general significance of all of these bodies is the same, and we have determined them together as total purin nitrogen. The presence of much purin nitrogen in the urine signifies the ingestion of meat or some richly cellular animal food. On a meat-free diet the purins are generally low unless actual destruction of tissue cells is going on.

Amino-Acids.—This fraction has figured considerably in the literature of pregnancy-urines in the last ten years, because the presence of amino-acids in large amounts has been thought to indicate a deficiency in the power of the liver to split off the nitrogen from the amino-acids which enter the portal circulation as the final products of digestion. Without entering into a lengthy discussion of this point we may say at once (1) that the amino-acid nitrogen is not synonymous with rest-nitrogen or undetermined nitrogen; it must be determined separately. (2) If the amino-acids were present in the urine of pregnancy in increased absolute amount the fact would not prove deficiency in the deaminating power of the liver, for they might originate from enzyme action in the placenta, in which case they would not necessarily pass through the liver before reaching the kidney. (3) A higher *percentage* of amino-acid nitrogen in late pregnancy is to be expected in view of the lower percentage of urea nitrogen caused by the retention on behalf of the fetus.

Undetermined Nitrogen.—Adding together all these fractions—urea, ammonia, creatinin, creatin, total purin and monamino-acid nitrogens—there yet remains a small fraction undetermined. Of course, we must recognize the fact frankly that what remains may be error. If an error of only 0.5 per cent. should occur in each of the several determinations made and all of the errors were by chance in the same direction, there might be an apparent undetermined nitrogen fraction of over 3 per cent. Assuming, however, that in most instances such errors would counterbalance each other, we find left in almost all of the urines we have examined an undetermined fraction of from 3 to 9 per cent A very small part in some cases is due to albumin; in a few urines we have determined what Henriques and Sörensen call the polypeptid nitrogen, i. e., extra amino-acid nitrogen after digestion of the urine with strong hydrochloric acid. The indications are that this would account for a considerable part of what we have called in our tables the "undetermined nitrogen." Henriques and Sörensen have found such a fraction in normal urines.

NORMAL WOMEN IN THE LAST MONTHS OF PREGNANCY

At Bellevue Hospital (from the service of J. Clifton Edgar), the ante-partum women were carefully examined, and three were selected who were in the last month of pregnancy and free from abnormalities. They were placed in a separate ward under the care of a nurse whose main occupation was the supervision of their diets and the collection of their urines. The women did no work and were practically in a condition of rest during the course of the observations.

On the first two days and the fourteenth or last day of the observation period, they were kept on the regular ward diet which contained meat. From the second to the eighth day they received a diet of whole milk, bread and butter and milk sugar. An effort was made to keep the calories supplied proportional to the requirements of the individuals. On the eighth and ninth days, in addition to the above diet, they received daily fifteen grains of thyroid extract. From the tenth to the fourteenth day they were fed a larger quantity of carbohydrate, and on the thirteenth day they received a gram of pure creatin with their food.

The pulse, respiration, weight and blood-pressure were taken daily. The weights remained practically the same during the entire period except for fluctuations of about a pound. That they were well nourished and that the children's weights did not suffer was shown by the fact that within three weeks they all had children weighing, respectively, 9 pounds, 4 ounces; 9 pounds, 8 ounces, and 7 pounds, 2 ounces. (Table 1.)

Each of the three women remained very constant in the total amount and the proportional amounts of the nitrogen excreted throughout the observation period. A glance at the table of averages[16] of the eleven days shows that one patient (Case 2) excreted about one-half as much nitrogen as either of the others. She weighed less and was fed more exactly in proportion to her physiologic requirements than were Patients 1 and 3. The urea was low, and the ammonia was normal in amount. The percentage figures for the ammonia were high throughout. Six of the eleven days it was over 10 per cent. and one day following catharsis it rose to 17 per cent. The average ammonia figure was 10.5 per cent. The monamino-acid and the undetermined nitrogen were

12. Sherman and Gettler: Am. Jour. Biol. Chem., 1912, xi, 323.
13. Janney: Ztschr. f. physiol. Chem., 1911, lxxvii, 99.
14. Shaffer: Am. Jour. Physiol., 1908, xxiii, 1.
15. Mendel and Rose: Jour. Biol. Chem., 1911, xi, 213.

16. Space does not permit the presentation of the analyses day by day. These will be given in a subsequent paper which will deal more at length with the question of high ammonias, influence of thyroid, etc.

low in amount although the percentage figures were high. The percentages are to be explained by the higher retention of nitrogen in this case than in the others.

The average of the thirty-three normal urines shows a urea figure somewhat lower than in the non-pregnant, while the other fractions are slightly higher. On the whole, there is very little difference.

PREECLAMPTIC WOMEN

Examinations were made of the urine of three preeclamptic women, one of whom developed convulsions two hours after the birth of her child.

CASE 4.—Patient, B. P., a multipara, aged 34, admitted Oct. 9, 1911, complained of headache, dizziness, sleeplessness, nausea, bad vision and swelling of her legs. She had a trace of albumin in her urine and her blood-pressure was 160 mm. She was placed in bed and kept on a milk diet for seven days. She had a number of hot packs and many of her symptoms improved, although the headache persisted for a number of days and the blood-pressure went as high as 195 mm. on October 16. On October 14, 15 and 16 she received in addition to the milk diet 15 grains of thyroid extract. She was delivered on October 26 and had a normal puerperium.

October 23, she complained of headache and dizziness and she had some edema about her ankles. There was a trace of albumin in her urine and her blood-pressure was 130 mm. Hg. Her urine was collected for three days. On the fourth day, October 28, the patient went into active labor and delivered herself at 8:30 p. m. During labor a specimen of urine was collected. Two and one-half hours after delivery she had a convulsion and during the next forty-eight hours she had in all eighteen convulsions. Between the convulsive attacks she was stuporous or semi-conscious. On the third day she became maniacal, but returned to normal mental condition on the fifth day. From then on her recovery was uneventful.

The patient was catheterized twelve hours after labor, not having voided in the meantime. A specimen from this urine was sent to the laboratory and the urine passed for the next few days was collected. Specimens of urine were obtained for three days before the convulsions, a few hours before, the first urine passed afterward and a number of subsequent specimens. They present a very interesting and instructive group of nitrogen partitions of the urine of preeclampsia and eclampsia (Table 3).

Discussion of Case 6.—The first three urines show normal urea and ammonia amounts and percentages.

TABLE 1.—NORMAL WOMEN

Case Number	Amount Grams								Per Cent. Total N						
	Total N	Urea	NH_3N	Cr_1N	Cr_2N	Purin	Formol Titr.	Undet. N	Urea	NH_3N	Cr_1N	Cr_2N	Purin	Formol Titr.	Undet. N
1. Average 11 days....	11.50	9.0	0.74	0.35	0.11	0.29	0.505	0.53	78.2	6.4	3.0	0.98	2.5	4.3	4.6
2. Average 11 days....	5.08	3.60	0.536	0.218	0.037	0.239	0.262	0.19	70.86	10.55	4.29	0.7	4.7	5.1	3.8
3. Average 11 days....	9.57	7.79	0.496	0.346	0.097	0.34	0.335	0.27	81.4	5.1	3.5	0.1	3.4	3.3	3.2
Average 33 urines.....	8.71	6.77	0.59	0.30	0.08	0.28	0.36	0.33	77.7	6.7	3.4	0.9	3.2	4.1	4.0

TABLE 2.—PREECLAMPTICS

Case Number	Amount Grams								Per Cent. Total N						
	Total N	Urea	NH_3N	Cr_1N	Cr_2N	Purin	Amino-Acid *	Undet. N	Urea	NH_3N	Cr_1N	Cr_2N	Purin	Amino-Acid	Undet. N
4. Average 8 days....	11.67	9.78	0.52	0.42	0.17	0.15	....	0.63	83.8	4.4	3.6	1.5	1.3	...	5.4
5. Average 11 days....	10.75	8.73	0.47	0.29	0.20	....	0.05	1.01	81.2	4.4	2.7	1.8	...	0.5	9.4

*By new method of Benedict and Murlin.

CASE 5.—Patient, M. A., a primipara, aged 25, admitted to the Bellevue Hospital School for Midwives, Oct. 7, 1911, had headache, nausea and slight edema of the extremities. There was a trace of albumin in her urine and the blood-pressure was 130 mm. Hg. She was placed on a milk diet and on October 18, 19 and 20, she received in addition 15 grains of thyroid extract. She was delivered October 24 and had a normal puerperium.

Discussion of Cases 4 and 5.—While both these women presented signs of impending eclampsia, there were no abnormal changes in the partition of the nitrogen. The largest amount of ammonia excreted by B. P. (Case 4) was 0.97 gm. on October 19. The highest percentage excretion was on October 12, 0.43 gm. (5.9 per cent.). The highest ammonia excreted by M. A. (Case 5) was 0.86 gm. (5.5 per cent.) on October 12. The preceding day the ammonia was 0.39 gm. or less than one-half and yet the percentage was about the same (5.1 per cent.). The amino-acid nitrogen was low in total amount and in percentage. Table 2 shows that the average composition of eight urines in the one case and of eleven in the other was perfectly normal.

PREECLAMPSIA AND ECLAMPSIA

CASE 6.—*Patient.*—A. K., aged 21, a primipara, was admitted Oct. 20, 1911, to the School for Midwives. On Urine 4 taken a few hours before the first convulsion, and Urine 5 taken twelve hours after are remarkably alike and contained the same amount of ammonia. Urine 6 was the first twenty-four-hour specimen after the convulsions began and shows a normal urea and ammonia output. Urine 7, the second twenty-four-hour specimen after the convulsions, contained 1.38 gm. of ammonia, or 31 per cent. of the total nitrogen. The following days the ammonia excretion was more than doubled (3.20 gm.), although the percentage of the total nitrogen was only 21 per cent. This ammonia cannot be considered as representing an ordinary acidosis, for the urine gave no reaction for acetone or diacetic acid. We have also made an estimate of the amount of ammonia which might be required to neutralize any lactic acid formed. The largest amount found in the urine of an eclamptic patient by Zweifel[4] was 0.621 gm. reckoned as zinc paralactate. This would correspond to about 0.080 gm. ammonia. During the next two days (Urines 9 and 10) the ammonia figure remained high. We have reasons, which will be fully presented in a subsequent paper, for thinking that all these high ammonias and high ammonias very commonly in the puerperium are due to decomposition in the bladder caused by use of the catheter.

In this case therefore the urine gave no indication of an impending attack and the ammonia was low at all periods up to the second twenty-four hours following the first convulsion.

INTRAPARTUM AND POSTPARTUM ECLAMPSIA

CASE 7.—*Patient.*—E. M., a primipara, aged 23, admitted to Bellevue Oct. 19, 1911, at 11 a. m., was in labor and the membranes had ruptured. At 4 p. m. she had a convulsion which was repeated three times before her delivery at 8:10 p. m. The patient was seven and one-half months pregnant and had a tuberculous hip with the right thigh fixed in adduction. The child being small, an easy delivery was effected with forceps. The child weighed 3 pounds, 14 ounces and left the hospital with the mother November 13.

Before the forceps operation the blood-pressure was 185 mm. Hg. One hour post partum it had dropped to 167 mm. A convulsion occurred three hours after delivery and another at eight hours. The following day the patient was comatose, cyanotic and had many moist râles of edema in the chest. Her blood-pressure was 110 mm. She received stimulation and saline irrigation by the drop method. At 5 p. m. she regained consciousness and rapidly improved. Ten days post partum her blood-pressure was 125 mm. Hg, and she had only a trace of albumin in the urine. No urine was obtained in this case before delivery.

CASE 8.—*Patient.*—M. C., aged 18, a primipara, admitted May 1, 1912, had been delivered in the morning and had had a convulsion shortly afterward. She arrived at the hospital about eight hours after the first convulsion. During the night or for the first twelve hours after admission, she had between forty and fifty convulsions. Between the attacks and for thirty-six hours after she was deeply comatose. She received croton oil, 2 minims, by mouth and two injections of ¼ grain of morphin. A hot pack was given every six hours and high colonic irrigations every three hours. On admission her blood-pressure was 204 mm. On the second day she was maniacal and remained so for forty-eight hours. She had a rapid convalescence. There was considerable albumin in her urine and also hyaline and granular casts. The urine was obtained by catheter for a number of days.

Discussion of Cases 7 and 8:—E. M. (Case 7) had six convulsions in all. She was profoundly ill and her recovery was hardly looked for. The first twenty-four-hour urine showed high ammonia 2.22 gm., or 18.5 per cent. Only one-half this amount was present on the second day, 1.10 gm. (16.9 per cent.), and on the fifth day it had returned to normal, 0.32 gm. (3.9 per cent.).

M. C. (Case 8) had over forty convulsions. Her urine was collected by catheter and many bacteria were found by microscopic examination. On May 7 the bladder was washed twice during the twenty-four hours and as a result the ammonia dropped from 1 gm. to 0.4 gm.

While Case 7 would tend to show that an acidosis resulted from the convulsions, Case 8 with seven times as many convulsions showed normal amounts of ammonia and amino-acid nitrogen (Table 4).

SUMMARY AND CONCLUSIONS

From the study of the partition of the nitrogen of 100 urines, it would seem that the ammonia and the amino-acid plus undetermined nitrogen fractions may be as high or higher in normal women in the last month of pregnancy than in women who have preeclamptic signs or even eclampsia itself. Convulsions themselves do not necessarily produce a condition of acidosis. High ammonia following an eclamptic attack, we believe, is often due to decomposition of the urine within the bladder from contamination by the catheter. The following conclusions may be drawn:

1. The average of many determinations shows that the nitrogen fractions of the urine in the last month of pregnancy are but slightly different from those in the non-pregnant.

2. Normal women in the last month of pregnancy may have an ammonia-nitrogen as high as 17 per cent. (after catharsis) and a combined amino-acid and undetermined nitrogen of 10 per cent.

3. Percentage figures alone are deceiving and of little value, for the total nitrogen is dependent on the amount of food absorbed and this is affected by intake, nitrogen retention, catharsis, etc.

TABLE 3.—POSTPARTUM ECLAMPSIA (CASE 6)

Urine No	Date	Total N	Urea N Gm.	NH_3N, Gm.	Cr_1N, Gm.	Cr_2N, Gm.	Total Purin N, Gm.	Formol Titr. N, Gm.	Undet. N, Gm.	Urea N, Per Cent.	NH_3N, Per Cent.	Cr_1N, Per Cent.	Cr_2N, Per Cent.	Total Purin N, Per Cent.	Formol Titr. N, Per Cent.	Undet. N, Per Cent.
1	Oct. 23-24	8.06	6.02	0.45	0.31	0.0	0.31	0.41	0.66	74.7	5.6	3.9	0.0	3.9	5.1	6.8
2	Oct. 26-27	11.09	8.37	0.62	0.43	0.0	0(?)	0.78	0.94	75.5	5.6	3.9	0.0	...	6.6	8.4
3	Oct. 27-28	7.90	6.31	0.46	0.31	0.0	0.28	0.40	0.14	79.8	5.2	3.9	0.0	3.5	5.0	2.6
4	Oct. 28 (labor).*.	0.45	0.34	0.03	....	....	....	....	....	75.6	7.5	...	...	...	...	...‡
5	Oct. 29 (14 hours after delivery).	0.41	0.30	0.03	....	...	....	....	....	73.2	7.0	...	...	...	...	...†
6	Oct. 29-30	4.87	3.61	0.11	0.25	0.0	....	....	....	74.1	2.3	5.2	...	...	...	...*
7	Oct. 31-Nov. 1....	4.42	2.29	1.38	0.40	0.0	0.08	0.16	0.11	51.8	31.2	9.1	0.0	1.8	3.5	2.6
8	Nov. 2-3	15.11	9.80	3.20	0.51	0.12	0.03	0.37	1.08	64.8	21.2	3.4	0.8	2.0	2.4	5.4
9	Nov. 4-5	15.73	11.07	2.42	0.46	0.08	0.06	0.45	1.19	70.4	15.4	2.9	0.5	0.4	2.9	7.5
10	Nov. 5-6	12.41	9.02	2.03	0.36	0.06	0.06	0.31	1.60	72.7	16.4	2.9	0.5	0.5	2.5	4.5

* First twenty-four hours' urine after convulsions. † Urine fourteen hours after convulsions began. ‡ Urine just before convulsions.

TABLE 4.—ECLAMPSIA

Case No.	Date	Amount Grams			Per Cent	
		Total N	NH_3N	NH_3N†	NH_3N	NH_3N
7	Oct. 20-21, 1911.....	12.01	2.22	0.38	18.5	3.2
	Oct. 21-22, 1911.....	6.51	1.10	0.18	16.9	2.8
	Oct. 24-25, 1911.....	8.26	0.32	...	3.9	...
	Oct. 28-29, 1911.....	11.96	0.53	0.34	4.4	2.8
	Nov. 4-5, 1911.....	5.88	0.20	0.15	3.4	2.5

† Method of Henriques and Sörensen.

Case No.	Date	Amount Grams			Per Cent.	
		Total N	NH_3N	NH_3N•	NH_3N	NH_3N
8	May 2-3, 1912.....	8.74	0.60	0.06	6.8	0.7
	May 3-4, 1912.....	16.27	0.63	0.17	3.8	1.0
	May 4-5, 1912.....	12.80	0.60	0.27	4.7	2.1
	May 5-6, 1912.....	12.03	1.06	0.43	8.8	3.6
	May 6-7, 1912.....	8.52	0.46	0.12	5.4	1.4

• By new method of Benedict and Murlin.

4. With all the clinical signs of preeclampsia, the nitrogen partition may be normal even up to and for twenty-four hours following the development of convulsions.

5. The nitrogen partition as an evidence of metabolic processes cannot be said to offer an index to the preeclamptic or the eclamptic condition. Alterations in the structure of the liver, and finally in the metabolic functions of this organ may be, for all that the urinary analysis shows, the result of the toxemia which ultimately leads to eclampsia, rather than the cause of the toxemia.

ABSTRACT OF DISCUSSION

DR. EDWARD P. DAVIS, Philadelphia: One cannot appreciate the significance of any research based on chemical examination without recognizing the fact that no one actually understands the metabolism of the living body, and that we must be cautious in attempting to take one function only in making an estimate in a matter of clinical importance. The problem of the care of the parturient woman as concerns her own self-poisoning is one of the most complex known to medical science; and such researches as have been noted in our presence emphasize the fact of the many-sided aspect of the problem, and that too much importance has long been based on the examination of the urine only in diagnosis. To be accurate and thorough in the matter, one would have to investigate the condition of the blood, for it has been proved that the toxins which often produce the death of mother and child are found more frequently in the blood than in the excretions. If they were in the excretions they would do no harm; in the blood, they are dangerous and often deadly. In approaching this problem, one must recognize not only the chemical factors of digestion, but also the influence of the nervous system and of the many other factors which make up the life of the individual. One cannot neglect the uterus and the placenta and the syncytium in this problem, and no estimate is accurate and efficient that does not study each case minutely by personal investigation. No laboratory report is decisive, no one finding, but all must be submitted to the approval of the obstetrician. Diagnosis must depend on personal study of each individual case. Hygiene and control are important. Thyroid extract does do specific work in a limited number of cases. Interference because of threatened failure of metabolism should be based on a study of the blood and not on a study of the urine. The mortality among mothers from disturbed metabolism is greatest in early pregnancy. In mid-pregnancy we may save the mothers at the expense of the fetus by conservative elimination. In the last months of pregnancy many of us believe prompt delivery offers the best result for mother and child. This research is very different from any we have seen, and is almost prophetic of a revision of our ideas on the subject, which I think is needed.

DR. H. C. BAILEY, New York: We gave thyroid extract in five cases—three normal and two abnormal cases. Our results were not very conclusive. Whether the extract was active we were not certain. Although there were changes in the metabolism they were not always in the same direction. If the thyroid increases the amount of urea, where does it come from? From the proteins of the body and thereby places an extra amount of work on the already damaged liver and excretory organs.

Immunization Against Plague Abandoned in Java.—A Holland correspondent in a recent issue of the *Wien. klin. Rundschau* states that the results of vaccination against the plague have been disappointing in Java. In 1911, 54,017 persons were vaccinated by the German and 11,703 by the Haffkine technic, but the proportional mortality averaged the same among the vaccinated and not vaccinated. Over 0.86 per cent. of the total unvaccinated population in the infected provinces contracted the disease; 0.26 per cent. of those vaccinated with the German technic and 0.16 per cent. with the Haffkine. Further attempts have been abandoned.

BOOKS AS CARRIERS OF SCARLET FEVER*

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Scarlet fever made its appearance in Valparaiso, Ind., September, 1908, and continued until June, 1911. It is estimated that during this time there were 400 cases, of which only 255 were reported to the city board of health, 145 were not reported and most of them were not subjected to quarantine regulations. Beginning in February, 1911, a special study of the epidemic was begun to determine, if possible, what steps were necessary to terminate this epidemic.

The question whether the infection was being spread through the medium of books was considered. If books were carriers of scarlet fever infection, the opportunity for the spread of the disease in this city by them was very great, as Valparaiso is a residence and school city with about 10,000 population. It supports two libraries, one a public city library, the other a public library in connection with the Valparaiso University. The libraries were both extensively used, the public library by the public school children, the citizens and the university students. The university library was used largely by the university students. Two bookstores situated near the university made a practice of renting text-books used at the university; two department stores in the city were maintaining circulating libraries, and in the lower grades of the public schools a large number of supplemental books were furnished the pupils by the school authorities and these books were passed from class to class. This showed the importance of determining whether books were mediums of the spread of the disease or not, and if so what was the practical method for rendering them harmless. To determine the part books played in the spread of scarlet fever in this epidemic an investigation was begun of the books in the city library, as this was the only place where sufficient records were kept to enable us to make a fair investigation, the scope of which included the following points:

1. The connection existing between the public library, the reading-rooms, the condition of books and the management of the library with reference to the spread of scarlet fever.

2. To ascertain what precautions were taken by the librarians to prevent the books from becoming the carriers of disease.

3. To determine if library books were responsible for any of the cases of scarlet fever in the city at this time.

4. To ascertain if books which had been in homes during or immediately after scarlet fever, when neither the houses nor books had been fumigated, have acted as carriers of the disease.

5. To determine whether books which had been burned were probably responsible for the cases of scarlet fever which occurred while the books were in the homes.

THE INVESTIGATION

1. The Library.—The building is an old brick dwelling-house which has been converted into a library building. The juvenile reading-room is well lighted and well ventilated; the other rooms are crowded and have poor lighting, but good ventilation facilities; the floors

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* Because of lack of space this article is abbreviated in THE JOURNAL by omission of the tabulated details of the book records. The complete article appears in the Transactions of the Section and in the author's reprints.

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and furniture are kept free from dust, the books are kept in open cases or on unprotected shelves and are as free from dust as they could be kept under the present condition of the building and furnishing. At frequent intervals the rooms have been fumigated with formaldehyd gas; the heating is by steam; sweeping is by brush, and "dust-down" is used. The books are in good repair and not badly soiled; the juvenile department is very popular, having had 1,000 borrowers who used over 10,000 books in 1910; this department had an attendance of 4,351 that year. Nearly 9,000 books were used by adults; the adult attendance was 7,000. The library contains about 9,000 volumes. Nearly 20,000 books were made use of last year. A splendid system was installed May, 1910, for keeping a record of all borrowers, and by it the librarian, if given the title of any suspected book, was able to give the name and address of the borrower and date due for return of book.

The popularity of the juvenile department and the attendance of children suffering from a mild attack of scarlet fever, or those who had been too early released from quarantine, undoubtedly was a source of direct contact, and doubtless some cases resulted; yet no specific case was traced to the library. The management is alert and desirous of making the library a perfectly safe and sanitary place.

2. Precautions Taken to Prevent Books From Becoming Carriers.—The principal precaution taken to prevent books from becoming carriers of disease consists in the enforcement of a rule that all books in a home, when a contagious disease develops, shall be burned. Whenever the librarian was notified that a borrower who had a book had scarlet fever, or that scarlet fever was in the house occupied by a borrower, she would notify the borrower to burn the book, and on release from quarantine to call and give particulars concerning its destruction; or, if it was returned the librarian would attend to the cremation. Notification of scarlet fever did not always reach the librarian for two principal reasons:

1. The board of health is not obliged to notify and in many instances did not notify the librarian of cases reported.

2. Many cases of scarlet fever had existed without being reported to the board of health and have escaped being subjected to quarantine regulations and the public library regulations also.

No special fumigation of books is practiced. Soiled books are washed with gasoline. The books are in good repair. Those on the shelves and in the cases are somewhat fumigated by formaldehyd when the rooms are fumigated. At frequent intervals the worn and soiled books are cleaned and rebound. In the future, the secretary of the city board of health should notify the librarian of all cases of contagious diseases when any danger of book contamination is possible.

3. Responsibility of Public Books for the Spread of Disease.—To determine if public library books were responsible for any case of scarlet fever in the city, during the time of this investigation, whenever a case of scarlet fever developed an inquiry was made whether any member of the family or any occupant of the house, at any time or just preceding, had had a public library book, and if so, the name of the book. The librarian was then asked to furnish a history of the book; for example, John F. developed scarlet fever March 4, 1911. His sister, Jeanette F., had just returned a certain book to the library. The librarian's record of this book showed it to have been in seventeen homes between April 3, 1910, and the date that Jeanette F. returned it to the library, March 9, 1911. The librarian's record with a statement whether the borrower had had scarlet fever or not, with the date of the disease, when this could be obtained, was as follows:

LIBRARIAN'S RECORD OF THE BOOK TAKEN BY JEANETTE F.

Name of Borrower.	Book Taken.	Had Scarlet Fever.*	Date of Disease.
Margaret B.	4/19/10	+	11/—/09
Pearl O.	6/ 1/10	—	.....
Ella G.	6/17/10	+	5/—/10
(This was known to be a short quarantine, making this a suspicious book.)			
William H.	8/ 1/10	—	.....
Helen H.	9/ 6/10	—	.....
Ivan C.	10/ 3/10	+	6/15/09
Martha B.	10/16/10	—	.....
Gladys V.	10/23/10	—	.....
Margaret D.	11 /3/10	—	.....
Geneva H.	11/ 4/10	+	7/—/10
Helen N.	11/11/10	+	—/—/98
Martin A.	11/22/10	+	4/—/09
Richard M.	12/12/10	—	.....
Bruce B.	1/ 3/11	—	.....
Harry G.	1/12/11	+	10/—/09
Eda L.	2/ 4/11	+	10/—/09
Jeanette F.	2/23/11	—	.....

* The plus sign (+) indicates that the borrower had scarlet fever and the minus sign (—) that the borrower did not have scarlet fever.

Jeanette F.'s brother developed the disease March 4, 1911, and as he was an attendant in the first grade of the Central School from which room two other cases developed the same day, it was believed that the three cases were from personal contact with a mild case in a child who was in attendance in the same room up to March 1. This book was given a clean bill of health. Eight other books of this class were traced.

Another suspected book was taken from the library by Marvin B., November 9, and was returned November 14. He developed a condition which was diagnosed as a tonsillitis, about November 7, but which proved to be a mild scarlet fever. Quarantine was established November 20, 1910. This book was being read by B. during the early part of his sickness, and was returned by him to the library before he was quarantined. The book was next taken home by Warren D. where there are four children in the family who never had the disease, without carrying the infection. It was then returned to the library where it remained from Dec. 7, 1910, until Feb. 2, 1911, when it was taken out by Ruth M. who had had the disease ten years previously. February 23 it went into the C. home where there were seven children, and from there to the Floyd B. home with four children; neither the C. nor the B. children had previously had the disease nor did they develop it from this book.

In none of the recent or present cases were the library books held responsible for the spread of the disease.

4. Unfumigated Books.—When it was attempted to ascertain if books which had been in homes during or immediately following scarlet fever, when neither houses nor books had been fumigated, had acted as carriers of the disease, the evidence pointed conclusively to the books being at least not important factors in the spread of the disease. About forty books were carefully traced and records studied with no specific evidence against them. These books have been freely used during the past year and have produced no cases. Scarlet

fever developed this spring, the exact source being unknown; but it is believed to have come from outside the city, and the isolation of the cases has put the disease in check with only three reported cases and possibly another case, which was not reported, but which was the probable source of the contagion in the city. The books were held blameless.

5. *Burned Books.*—Books that had been burned while they were in homes where scarlet fever developed were proved to be probably as innocent of acting as carriers, as either of the other classes. One book belonging to this class was taken out of the library by David L. November 1. His brother developed the disease Nov. 3, 1910, not having read the book. This book is not a very popular one, had few borrowers with no history of having been exposed to the disease, and therefore could not be charged with producing the disease.

At the beginning of this investigation of the public library, as fast as any suspicious book was discovered it was taken from the shelves and put in the store-room and kept there until the study had been completed. The weight of evidence indicated clearly that the books were not an important factor in the spread of the disease, and they were placed back on the shelves without being fumigated and again put in circulation, without producing the disease and no scarlet fever developed in the city proper between July, 1910, and April, 1911. The last case among the university students occurred March 16, 1911, and during this interval from March, 1911, to May 25, 1912, the students have been using the university library and also using rented books from the university bookstores, showing that these books cannot be regarded as carriers of the disease. This to my mind warrants the following conclusions:

CONCLUSIONS

1. If books act as carriers, it is only immediately after being contaminated with the discharges of the patient; yet this investigation has failed to reveal a single instance of this kind.

2. Books that have been used by scarlet fever patients do not long contain the infection in such a way as to transmit the disease to man.

3. Any book which has been handled by a scarlet fever patient should be burned or fumigated. The most practical method for general book disinfection at this time is the Beebee carbogasoline method. This consists in using gas-machine gasoline and 2 per cent. phenol crystals; the books are immersed in this mixture for twenty minutes, removed and placed before an electric fan for two minutes, and then set on end for from twenty-four to forty-eight hours.

The supplemental study books used in the Valparaiso public schools were all disinfected by this method last September. Prof. A. A. Hughart and I devised an apparatus for this consisting of a zinc tank 21 inches long, 15 inches deep and 8 inches wide, with a tight-fitting cover. A faucet in one end near the bottom drains off the gasoline. Zinc strips bent in suitable form to serve as racks facilitate the handling of the books.

ABSTRACT OF DISCUSSION

DR. C. E. FORD, Cleveland: We are sending the books from given cases of communicable disease to the appropriate ward in the hospital for contagious diseases. We find that a fairly satisfactory way of avoiding the burning of books. If we get a book in a scarlet fever case, it is sent to the scarlet fever ward, sprayed with formaldehyd and wrapped with paper for safety during transportation.

DR. JOSEPH GOLDBERGER, Washington, D. C.: We very frequently have observations of a positive nature; that is, observations showing the apparent transmission of communicable diseases by fomites, such as books. The trouble with all such observations is that it is almost impossible to exclude other modes of transmission than those alleged in the particular instance. In cases such as reported by Dr. Nesbit we have negative results; and although the observations may by some be regarded as relatively few, it is nevertheless perfectly safe to conclude, even if they were much fewer in number, that in those instances no transmission actually took place. And this is a very much better thing than to be told that in one or two instances, perhaps a dozen, or even two hundred, or a thousand, or six thousand, transmission apparently took place, but where, as a matter of fact, absolute exclusion of other sources of infection could not be made. I think the observations reported are of such high significance that one cannot emphasize their value too much.

RECENT ADVANCES IN OUR KNOWLEDGE OF SCARLET FEVER*

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In 1907, Ludvig Hektoen[1] gave a complete summary of our knowledge of scarlet fever. He took the view that the specific cause of scarlet fever was not known and that the streptococcus was a secondary invader which found an especially favorable soil in the condition of this disease. To-day, five years later, the true nature of the pathogenetic agent of scarlet fever still remains to be discovered and little progress has been made in our understanding of this disease. Yet some contributions have been added of sufficient interest to justify a connected report of them and a new review of the present status of our knowledge.

The fact that no other organism has been found with any constancy in scarlet fever left the controversy as to the primary or secondary rôle of the streptococcus unsettled. Of the intimate biologic and clinical relation of the streptococcus to the disease there can be no doubt, because of (1) the constant presence of the streptococcus in large numbers in the throat and on the tonsils; (2) the frequency with which it is found in the blood during life and in most of the organs after death; (3) the fact that by far the greater majority of complications in the disease and of the deaths in scarlet fever are to be attributed to the invasion of this microbe, and (4) the evidence of systemic reaction to the streptococcus by the presence of antibodies in the blood.

STREPTOCOCCUS INFECTION AND IMMUNITY

The latter subject, the presence of specific antibodies for streptococci in scarlet fever, has been studied with great care in the last few years.[2] This applies chiefly to the opsonin and the complement-deviating antibodies, whereas in the study of agglutinins nothing new has been added.

The presence of opsonins[3] in scarlet fever was to be anticipated from the important rôle which has been con-

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*Read in the Symposium on Recent Advances in Our Knowledge of the Acute Infections in the Section on Pathology and Physiology of The American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Hektoen, L.: Is Scarlet Fever a Streptococcus Disease? THE JOURNAL A. M. A., April 6, 1907, p. 1158.

2. For complete literature see Koessler, Karl K., and Jessie M.: Specific Antibodies in Scarlet Fever, Jour. Infect. Dis., 1911, ix, 366.

3. Tunnicliff, R.: Jour. Infect. Dis., 1907, iv, 304. Banks, A. G.: Jour. Path. and Bacteriol, 1907, xii, 113. McCririck, T.: Jour. Path. and Bacteriol., 1911, xvi, 16. Anderson, J. M.: Jour. Path. and Bacteriol., 1911, xvi, 106.

ceded to phagocytosis in the mechanism of streptococcus infection and immunity, ever since Metchnikoff's[4] early researches on erysipelas.

The opsonic curve for the streptococcus shows a characteristic course during the various periods in scarlet fever. In the beginning the streptococco-opsonic index is below normal in the majority of cases.

As the acute symptoms subside the index rises above normal and usually remains so during convalescence in uncomplicated cases. In fatal cases the opsonic power may be markedly subnormal. Definite localized streptococcus complications, as secondary lymphadenitis and otitis media and arthritis, as well as nephritis, are inaugurated by a depression in the streptococcal opsonic index which rises again when improvement sets in. These regular variations of the opsonin are absent for the pneumococcus, staphylococcus and pseudodiphtheria bacillus and limited to the streptococcus, and are, in so far, specific for the streptococcus. But the opsonin is not specific for any certain streptococcus scarlatinæ for the same variations in the opsonic index can be observed with other streptococci as those cultivated from erysipelas. The parallelism of the fall and rise of the index with the acme of the acute symptoms and their abatement gives a very impressive picture of the systemic reaction of the organism to the general invasion of the streptococcus and substantiates the assumption that a good part of the clinical manifestation is directly to be ascribed to the streptococcus.

The presence of complement-deviating antibodies for streptococci in the serum of scarlet fever was first successfully demonstrated by Foix and Mallein,[5] who used a polyvalent antigen of streptococci which had been cultivated from numerous cases of scarlatinal angina. With serums of twelve scarlet fever patients they obtained deviation of the complement ten times. Controls made with serum of other streptococcus infections, as erysipelas and puerperal sepsis, showed complete hemolysis. Liverato[6] examined eighteen scarlatinal serums using as antigen extracts of streptococci, staphylococci, pneumococci, and typhus, colon and influenza bacilli. Complete inhibition of hemolysis was obtained by the streptococcus extract only and this in every case although the streptococci used were not cultivated from cases of scarlet fever. Liverato considers his findings an important contribution toward the proof of the streptococcal nature of scarlet fever.

Schleissner[7] used suspensions of streptococci from scarlatina, erysipelas, puerperal sepsis and panophthalmia as antigen. The serum of scarlatina, especially, reacted positively with scarlatinal streptococci, whereas control serums from other infections never gave a positive reaction. Some serums, however, reacted positively with other streptococci, as those of puerperal sepsis and panophthalmia. In a later communication[8] the same author tries to bring additional proof for the specificity of the scarlet streptococcus by means of bactericidal experiments. A mixture of leukocytes, rabbit serum and scarlet fever streptococci, plated out in blood-agar, showed in most cases complete destruction of this streptococcus, while other streptococci pathogenic for man (erysipelas, puerperal fever) multiplied without restraint. Kolmer[9] obtained complement deviation of serums from scarlet fever with streptococci in only 12.2 per cent.

From all this it is plain that the serum of scarlatinal patients contains antibodies for the streptococcus. This speaks undeniably for the intimate biologic relation of this microorganism to scarlet fever. The existence of a specific scarlatinal streptococcus, however, is not demonstrated by this work, and no light has been shed on the primary etiology of the disease. The very presence of antibodies for streptococci cannot solve the problem as to whether the streptococcus is the primary agent of the disease or a secondary invader and even if it had been shown that this reaction were obtainable only with scarlatinal serum, and streptococci cultivated from scarlatina, the question of the etiology of the disease would still be unsolved. In this connection the work of DeWael and Sugg[10] may be recalled.

They found that the streptococci constantly present in small-pox are specifically and exclusively agglutinated by the serum and other serous liquids of variola patients and convalescents in a dilution up to 1:800, but not by any other immune streptococcus serums. This does not permit the conclusion that perhaps small-pox, too, is a streptococcus disease, a supposition which has been disposed of by unquestionable experimental evidence,[11] but it points to a very close relation between the primary virus and the secondary infection. That this is really a form of symbiosis has been shown[12] in the following way: If the cornea of a rabbit is treated with a mixture of variolous virus, active serum and streptococci, there results a violent reaction which, however, fails to appear if the variolous virus alone, or the streptococci alone, or the serum alone is inoculated.

SPECIFIC TREATMENT

This relation of the streptococcus to scarlet fever, together with the fact that only too often the ultimate fate of the patient depends on this secondary invader, suggests the reason for using efficacious antistreptococcus remedies and explains their eventual specific effect.

Time does not permit me to speak here of the therapeutic results obtained with the various streptococcus serums advocated as specific in the treatment of scarlet fever. But it may be emphasized that only those antistreptococcus serums should be used which have a potency in content of antibodies, or faculty to stimulate the phagocytic activity of the leukocytes, ascertained by reliable laboratory tests.[13]

One form of specific treatment I wish to mention here not so much for the practical value attributed to it but on account of a phenomenon which has direct bearing on our account of the pathogenesis of scarlet fever. This is the prophylactic treatment of Gabritschewsky,[14] by means of a streptococcus vaccine used quite extensively by Russian physicians. Langovoi, Nikitin, Vladimiroff and Tesjakoff have published detailed reports of the prophylactic use of this vaccine. Thus, in the years 1907-1909, Tesjakoff vaccinated prophylactically, 15,376 children, in eighty-six different foci of the scarlet fever epidemics at that time.[15]

Of these 15,376 children, 7,234, or 47.6 per cent., were vaccinated once; 4,060, or 27.4 per cent., were vaccinated twice, and 4,078, or 26.5 per cent., were vaccinated three times.

4. Metchnikoff: Virchows Arch. f. path. Anat., 1887, cvii, 209.
5. Foix and Mallein: Presse méd., 1907, xv, 777.
6. Liverato: Centralbl. f. Bacteriol., liv, 422.
7. Schleissner: Folia serol., 1909, iii, 271.
8. Schleissner: Jahrb. f. Kinderheilk., 1911, xxxviii, 317.
9. Kolmer: Arch. Int. Med., February, 1912, p. 220.
10. DeWael and Sugg: Arch. intern. de pharm. et de thérap., 1903, xii, 205.
11. Perkins and Pay: Jour. Med. Research, 1903, x, 195.
12. Prowazek and de Beaupaire: München. med. Wchnschr., 1908, lv, 44.
13. See in this connection the work of G. H. Weaver and Ruth Tunnicliff: Jour. Infect. Dis., 1912, ix, 130.
14. Gabritschewsky: Ztschr. f. Bacteriol., 1906, xli, 7.
15. For complete literature on vaccine prophylaxis see Smith: Boston Med. and Surg. Jour., 1910, clxii.

Of all the children vaccinated 746, or 4.8 per cent., were taken sick with scarlet fever.

Of those vaccinated once, 478, or 6.6 per cent., were taken sick; of those vaccinated twice, 182, or 4.5 per cent.; of those vaccinated three times, eighty-six, or 1.9 per cent.

From these figures Tesjakoff concludes that whereas one vaccination alone offers a very inefficient protection, three vaccinations produce an undoubted but not an absolute protective immunity.[16]

So far the figures of the Russian author certainly justify his conclusion, but the whole question assumes a widely different aspect if we compare these results with our conditions. Tesjakoff obtained in the children which he vaccinated three times such a percentage of morbidity as to reach 1.9 per cent. The morbidity in Chicago in the four years 1907-1910 shows an average of only 0.3 per cent. of the whole population, without prophylactic treatment. This does not infringe on the value of the prophylactic vaccination as such but emphasizes how important it would be to know intimately the character of the severity of scarlet fever at every period of the year in the various countries of the world before we could apply such statistics directly to our own conditions.

Gabritschewsky as well as Langowoi and Vladimiroff, later observed in about 10 per cent. of the children vaccinated a very startling manifestation. The place of the injection of the vaccine showed not only the usual signs of local reaction but the lymph-vessels and lymph-nodes of this region became involved, swollen and painful. A small macular exanthem appeared round the point of injection and developed soon into a general scarlatiniform eruption. The general condition of the patient grew worse, an angina and strawberry tongue developed and as early as the second and third day a desquamation appeared, in some cases even going to hematuria. This whole picture resembles so closely that of scarlet fever that Vladimiroff concludes that this phenomenon demonstrates the primary etiologic rôle of the streptococcus. In regard to this idea, it must first be said that in a study of the prophylactic use of the streptococcus vaccine in Boston, not one such phenomenon has been observed.[17] Further, in this age of extensive vaccine therapy streptococcus vaccine has been used in the last year in many thousand cases without one report of a single case in which similar symptoms developed.

LATEST RESEARCHES INTO ETIOLOGY

It is obvious that it would be of value in our understanding of the pathogenesis of scarlet fever if it could be demonstrated that other antibodies than those for streptococci are present in the blood with some constancy. The attempt has been made unsuccessfully by several investigators with the complement-deviation method. The failure seems to have been due to the choice of an unsuitable antigen from too close an adherence to the Wassermann method. In the search for antibodies in a disease the germ of which is unknown or not capable of cultivation such organs should necessarily be used as antigen which clinically as well as anatomically appear to be involved principally. In scarlet fever this was found to be not the liver but the lymph-nodes. The condition which an appropriate antigen must fulfil for use in the search for a specific scarlatinal virus seemed to my associates and myself to be the following: (1) The organs must come from an acute toxic case of scarlet fever in which the patient succumbed rapidly and without secondary reaction and complications; (2) the blood of the patient examined in the last stage before death should contain no streptococci; (3) the blood-serum ought, further, on being tested with an active scarlatinal streptococcal emulsion, to show no deviation of the complement and the activity of the streptococcus antigen used should be tested with the corresponding immune serum; (4) the extracts must show by culture experiments that they contain no streptococci; (5) the watery organ extract tested with antistreptococcus immune serum should show no deviation of complement. From the especially mild character of scarlet fever in Chicago, it was not easy to find such foudroyant and toxic cases as answered to these five conditions. My associates and I succeeded after long preliminary tests in finding three cases the conditions in which corresponded to all the demands which we had placed on a suitable antigen. We employed only inactivated serums which were obtained on the day of the experiment. As amboceptor the serum of rabbits immunized against sheep's blood was used. In order to know whether normal amboceptor for sheep's blood was contained in the human serum we tested this each time without the addition of antigen and amboceptor. If by this control test we obtained hemolysis we removed the natural chief amboceptor by absorption and then repeated the experiment. Besides the normal serums, serums of measles, diphtheria, erysipelas, malignant tumor, tuberculosis and nephritis were used as controls. None of these control serums prevented hemolysis with the extracts. In 118 cases of scarlet fever the serums were tested in this way for antibodies against the extract described, eighty-one, or 68.6 per cent. showing a complete binding of complement. It is interesting that of the serums from cases of scarlatinal nephritis examined, every one gave a positive reaction. In respect to the time of the first appearance of these antibodies it may be said that they do not seem to be present in the blood in demonstrable quantities before the onset of the second week, the eighth day being the earliest in which positive reaction was obtained. So far as the duration of the action is concerned the serum was found to be active in the twelfth week and in one case of scarlatinal nephritis even in the sixteenth week. The following conclusions were suggested by the results obtained:

1. The serum of scarlet fever patients contains specific antibodies for an unknown virus.

2. This unknown virus seems to be present especially in the cervical lymph-nodes.

These conclusions lead necessarily to the inference that the streptococcus is to be discarded as the etiologic factor of scarlet fever.

EXPERIMENTAL SCARLET FEVER

The great difficulty in determining the specific properties of material containing the supposed virus lies in the fact that scarlet fever is not communicable to animals. Recently, however, several investigators have reported encouraging results in experimental scarlet fever. The successful work of Metchnikoff and Roux in experimental syphilis in apes suggested the use of these animals for the transmission of scarlet fever also.

Cantacuzene[18] reports that he has produced typical scarlet fever in monkeys (*Macacus cercopithecus*). From

16. Tesjakoff: Westnik. Obschestvensi Gigieni, September and October, 1910; from Folia Serologica, 1910, vii, 76.

17. Watters, W. H.: THE JOURNAL A. M. A., Feb. 24, 1912, p. 546.

18. Cantacuzene: Compt. rend. Soc. de biol., 1911, lxx, 403.

nine animals injected, four showed after thirty-seven, nineteen, twelve and five days, respectively, fever of 40 C. and a purple-red eruption of the face, followed by a marked desquamation. Two of the positive results were obtained through the subcutaneous injection of the blood of one patient sick with scarlet fever, who had shown the eruption for only a few hours. Of the remaining two monkeys that developed symptoms, the first was injected subcutaneously with pericardial exudate, the other with an emulsion of the tracheobronchial glands. The blood and exudate were free from any demonstrable microorganisms.

About two months later Bernhardt[19] gave an account of experiments in the same direction. He injected an emulsion of the coatings from the tongue in the early stages of scarlet fever into the groin of his monkeys. Some of this material he rubbed over their tonsils and tongue. This inoculation was followed by a rise in temperature and swelling of the lymph-nodes in the inguinal region and on the fifth day the animals were quite sick. The inguinal glands were now extirpated and an emulsion of them injected into the groins of another series of monkeys. After three such passages this material was free from streptococci, yet it was still virulent for the animals. The symptoms developed were similar to those of scarlatinal fever, a punctiform exanthem on face, neck, shoulders and chest, and the characteristic strawberry tongue. This was followed by a lamellate desquamation. These symptoms appeared whether the material injected was freed from streptococci by filtration through a Berkefeld filter or not. But streptococci alone did not produce the characteristic symptom-complex.

While Bernhardt used for his experiments the lower monkeys (*Macacus cercopithecus*), Landsteiner and Levaditi[20] used chimpanzees, the same species as Metchnikoff and Roux had first used successfully in the experimental transmission of syphilis. They took the coating of the tonsil and the blood of children sick with scarlet fever as material. By introducing this into the throat and by inoculation under the skin, they produced a disease in one chimpanzee, characterized by fever, an angina, with redness and swelling of the mucous membranes of pharynx and tonsils, and the formation of a grayish-yellow deposit on the latter, and swelling of the papillæ of the tongue. A general eruption followed resembling closely the scarlet fever rash in children. This ape died and the post-mortem findings showed lesions in the kidneys and the skin and a tumefaction of the lymph-nodes which Landsteiner and Levaditi consider as identical with the changes found in human beings. With streptococci isolated from scarlet fever patients they were unable to produce the disease picture.

Hektoen and Weaver[21] reported some experiments made during the time from December, 1909, to September, 1910, in which they fed monkeys with milk which was infected with material from the throat and mouths of children sick with scarlet fever. From thirteen monkeys (*Macacus*) fed in this way, ten remained well and three died. No streptococci or other microorganisms could be demonstrated by microscopic or cultural methods. The sterile blood taken from the heart of the third monkey immediately after death was mixed with sterile milk and fed to a healthy monkey for three days. This one became sick four days after the milk was first fed, and refused food, the temperature rising to 104.1 F.; the leukocyte count was 52,000. The leukocytosis persisted for five days and disappeared as the temperature subsided and the appetite returned. This sickness was suggestive, as it came on four days after feeding and ran a short course with fever and leukocytosis; but there was no cutaneous eruption.

These are, in brief, the advances made in the last five years in our knowledge of scarlet fever. Though the etiologic agent has not been found and is yet to be discovered, the place to be attributed to the streptococcus has been more clearly recognized. The streptococcus almost constantly present leads to a systemic reaction of the organism which finds its expression in the presence of antibodies against it. The streptococcus, however, can no longer be identified with the virus of scarlet fever, whose existence and presence in the lymph-nodes in a high concentration must be assumed from the presence of specific antibodies in the blood. The experimental transmission of scarlet fever to apes and monkeys substantiates this statement and points to new possibilities for the closer study of the nature of this virus.

32 North State Street.

19. Bernhardt: Deutsch. med. Wchnschr. 1911, xxxvii, 792.
20. Landsteiner and Levaditi: Compt. rend. Soc. de Biol., 1911, lxx, 641; Gaz. d. hôp., 1911, p. 784. Landsteiner, Levaditi and Praeck: Ann. de l'Inst. Pasteur, 1911.
21. Hektoen, L., and Weaver, G. H.: THE JOURNAL A. M. A., June 17, 1911, p. 1795.

THE ARTIFICIAL CULTURE OF FILARIAL EMBRYOS

A PRELIMINARY NOTE *

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AND

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The earliest success of Bass[1] in the cultivation of certain parasitic protozoa (plasmodia) *in vitro* led one of us (Wellman) to attempt the nurture in artificial mediums of the embryos of *Filaria immitis* Leidy. At that time a considerable number of positive cultures was obtained, using defibrinated dog's blood inactivated for long periods of time at comparatively low temperatures. Since the return of the malarial expedition of the Tulane University Department of Tropical Medicine from Central America additional work has been completed, employing their technic[2] and comparing results with ordinary blood-cultures. A fuller statement of the work thus far accomplished and the details of future progress will be presented later.

Experiments were devised to determine the influence of various whole bloods, serums and diverse mediums, and also the effects of temperature, air, etc., on the cultures.

The embryos live for ten or twelve days in some specimens of sterile defibrinated dog's blood at room temperature (28 C.), and considerable increase in size occurs, the parasites growing to 1⅔ their former

* Study 24, from the Laboratories of Hygiene and Tropical Medicine under the direction of Creighton Wellman, Medical Department, Tulane University of Louisiana.

1. Bass, C. C.: THE JOURNAL A. M. A., Nov. 4, 1911, p. 1534.
2. Bass, C. C., and Johns, Foster M.: The Cultivation of Malarial Plasmodia (Plasmodium Vivax and Plasmodium Falciparum) in Vitro, Jour. Exper. Med., October, 1912, p. 567.

dimensions. At 37 C. the cultures die out in from three or four to eight days and little or no increase in the size of the embryos can be seen. It may be noted here that the adult worms, both male and female, will live from three to five days in sterile defibrinated dog's blood at 37 C., but, even if fecund females, or both males and females, are included in the same tube no increase in the number of embryos in the medium can be noted. Dog's blood containing embryos, if added to dog-serum, to human serum or to guinea-pig serum, shows little increase in the size of the contained parasites either at room temperature or at 37 C.

Other mediums, such as hemoglobin agar, bouillon, citrated dog and human blood, were less successful than defibrinated blood.

Our best results were obtained with dextrose dog-serum at low temperatures. The cultures were prepared by adding 0.1 c.c. of filariated dog's blood to 1 c.c. of dog-serum which contained 0.01 per cent. of dextrose. These were placed in the ice-chest at 12 C. Such cultures live from twelve days to two weeks and the parasites become from 2 to 2⅓ times as long as when planted. The addition of fresh serum after removal of the old (on the eighth day) seemed to aid the growth and vitality somewhat, as such cultures have remained alive over two weeks and the embryos have increased to 2½ times their original length.

It is rather curious that, after the low temperature, the next best temperature for producing growth of the parasites is as high as 40 C. At this temperature, in the medium last mentioned, an increase of growth to 1¾ times the original length of the embryos is seen after eight or nine days.

Cultures which are contaminated with bacteria in many instances give quite as good results as those which are sterile, especially at low temperatures. When incubated at high temperatures such cultures become rapidly overgrown with bacteria and the embryos die, while at low temperatures (12 C.) and even at room temperature (28 C.) they seem to thrive in the presence of certain bacteria. Possibly the low temperature, by allowing the presence of certain bacteria and their products while preventing the excessive development of such organisms, approximates in a degree the conditions found in the mosquito's stomach.

It is probable that we have by the above methods nurtured the microfilariæ to a point which corresponds with the limit of their development in the digestive tract of the mosquito, and that a modification or change of the medium in order to approximate their surroundings in the malpighian tubules of the same insect (wherein their subsequent development occurs) will be necessary to carry the parasites to sufficient maturity to make possible the infection of animals from cultures. Further research along these lines is in progress and will be published later.

We wish to acknowledge the help of Mr. Percy L. Querens, student assistant in the Laboratories of Tropical Medicine, in the routine work of planting and examining the series of cultures studied in the course of the work.

Tongue Sign of Cancer of the Esophagus.—Guarnaccia calls attention in the *Archives Int. de Laryngologie*, 1912, xxxix, 88, to the information to be derived from progressive retrofixation of the tongue with cancer of the esophagus. He has never encountered this sign in other affections in the region but has found it constant even with incipient cancer of the upper third of the esophagus. The patient cannot put out his tongue except with difficulty and pain, and it is almost impossible to draw out the tongue.

SURGERY OF INTRAMEDULLARY AFFECTIONS OF THE SPINAL CORD: ANATOMIC BASIS AND TECHNIC

WITH REPORTS OF CASES *

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In the course of more than sixty spinal operations I have had occasion to observe a number of lesions within the substance of the cord which seemed amenable to surgical treatment. This led me to investigate the subject in order to determine the frequency of localized intramedullary disease, and the part of the cord into which an incision can be made with a minimum amount of injury to the delicate cord tissue. In addition, I have attempted to develop a special technic for intramedullary spinal surgery, and have made use of this technic in a number of spinal operations in which the cord itself was invaded during the operative manipulations.

The results of my investigations have convinced me that under the proper conditions and with the proper technic it is perfectly feasible and safe to incise the cord substance in order to allow of the extrusion of localized intramedullary growths, to drain cysts in the substance of the cord, etc. I am at present investigating experimentally on animals the subject of intramedullary operations, and hope in the near future to report my experiences and the results of the histologic studies of spinal cords in which incisions at various levels had been made.

Intramedullary tumors are not by any means so rare as ordinarily they are believed to be. Thus Allen Starr,[1] quoting from Schlesinger, states that among 302 tumors of the cord, 125 were within the cord substance. These included sarcoma, tuberculous tumors, gumma, glioma, lipoma, cysticercus, neuroma, cholesteatoma, myxoma, teratoma, adenoma (Benda), endothelioma, etc. Many of these intramedullary growths infiltrate the cord substance and increase in size by extending upward and downward, but some enlarge in their transverse diameter, are encapsulated and of small size. Gowers[2] says that "these tumors in some cases blend with the substance of the cord, but in other instances they are bounded by an area of softening which often isolates even invading growths. Some tumors are sharply limited." According to Flatau,[3] the comparative frequency of extramedullary and intramedullary tumors is as 2.6 to 1 (fifty-seven intramedullary tumors in 213 cases). Although one cannot estimate from the reports the frequency of localized and encapsulated intramedullary tumors, the fact that one frequently finds illustrations and descriptions of such growths in the literature shows that they are not so very rare. Localized tumors have been found at operation by Krause,[4] Ropke,[5] von Eiselsberg,[6] Elsberg and Beer,[7] and many others. Localized cysts have been found by Krause[4] and by myself. That localized collections of fluid do occur in syringomyelia and hematomyelia is well known. Foreign bodies (bullets) have been found lodged in the cord substance.

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Starr, Allen: Text-Book of Nervous Diseases, 1909, p. 442.
2. Gowers: Diseases of the Nervous System, 1899, p. 609.
3. Flatau: Handbuch der Neurologie, ii, 640.
4. Krause: Chirurgie des Gehirns und Rückenmarks, ii.
5. Ropke: Arch. f. klin. Chir. (Langenbeck's), 1911, xcvi, No. 4, p. 963.
6. Von Eiselsberg: Mentioned by Ropke (Footnote 6).
7. Elsberg and Beer: Am. Jour. Med. Sc., November, 1911.

These localized intramedullary conditions have rarely been attacked by the surgeon, because the necessary operative manipulations are almost certain to result in extensive and irreparable injury to the cord tissue. For this reason it has been the common practice to consider disease within the substance of the cord entirely hopeless. In the literature, however, are to be found isolated cases in which intramedullary tumors were removed with a satisfactory improvement in the patients' symptoms (Ropke, von Eiselsberg, Elsberg and Beer); intramedullary cysts and foci of softening have been drained (Krause, Elsberg); a small well-encapsulated tuberculous focus has been removed (Veraguth and Brun), and the attempt has been made (Abbe, Krause, Elsberg) to drain a syringomyelitic collection of fluid into the subdural space. The cord has been incised in order to remove a bullet from its substance (W. Braun), and for the purpose of decompression in extensive irremovable intramedullary tumors (Krause, Cushing, Elsberg). These efforts to attempt the surgical relief of affections within the substance of the cord are isolated efforts, and were not based on regular well-worked-out methods of procedure.

For the proper development of intramedullary surgery, the neurologic surgeon must understand the structure of the cord in its finest detail. He must master the delicate technic of the making of an incision and must have at his command a method or methods by means of which the intramedullary manipulations shall be accomplished with a minimum amount of injury to the delicate and important structures of the spinal cord. In this connection I shall consider the fine anatomy of some of the conducting tracts of the spinal cord, the course of fibers in the posterior columns and the regions where an incision into the cord will cause a minimum amount of injury to fibers of the posterior roots.

ANATOMY OF THE CORD

Not only from their anatomic position and their physiologic character, but also from the ease with which they may be exposed, the posterior columns are the most favorable for an incision. The fibers in the posterior columns convey principally deep muscle and tactile sensations to higher levels, although the fibers for all varieties of sensation enter the cord in the posterior spinal roots. Our knowledge of the conducting paths for the various sensations is still incomplete; the following is a summary of all that is known:

The fibers for the sensation of pain enter the cord in the posterior roots, and soon pass through the posterior horn and gray matter to the anterior part of the lateral column on the opposite side. The fibers for thermesthesia take a similar course, but they do not cross to the other side so quickly as the pain fibers, but require from two to five segments for the complete crossing. The fibers for touch pass partly along the same course as the pain fibers and partly up the posterior columns on the same side to the posterior column nuclei at the extreme upper end of the cord. In these columns also lie the paths for deep muscle sense (postural recognition, spacial discrimination, etc.). When one part of the sensory pathway in the cord is interrupted, other tracts may take up the transmission of sensations. Although this is probably true for all kinds of sensation, the tactile sensations especially seem to run in a bilateral path and are not apt to be markedly affected by a purely unilateral lesion.[8]

8. Rothmann believes that sensory fibers for touch exist also in the anterior columns of the cord.

The posterior columns, in short, contain mainly fibers (endogenous and exogenous; primary and secondary paths) which contribute to the transmission of tactile and deep muscle (kinesthetic) sensations, and we must next determine the course of these tracts in the posterior columns.

As is well known, the fibers of the posterior roots from below upward enter the cord and lie at first just mesial to the posterior gray horn. A part of these fibers remain in the posterior column, where they divide into ascending and descending branches. The ascending branches give off numerous collaterals to the gray horns until the level of the next root above is reached. Fibers from this second root then take their position on the mesial side of the posterior horn, crowding the fibers from the preceding (lower) root more toward the median line. It will be seen, therefore, that the fibers finally form a succession of lamellar tracts which in each case lie at first next to the posterior horn and gradually become shifted medianward by those which enter the cord with the higher nerve-roots (Schaefer). This arrangement of tracts in the dorsal columns has been studied in the lower animals by Kahler and many others, while degenerations in the tracts of the cord in man

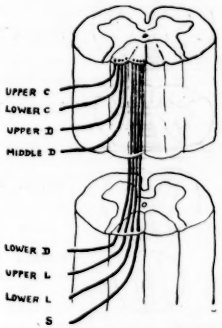

Fig. 1.—The course of fibers for tactile and deep muscle sense in the posterior columns of the cord (diagrammatic). The fibers form a series of lamellar tracts, the fibers from the lowest posterior roots lying nearest the posterior median septum of the spinal cord.

have been described in detail by Schaffer, Ziehen, Collier and Buzzard, Wichmann, Schultze, Petren and others.

As a result of this arrangement of conducting-paths in the posterior columns, the fibers from the sacral posterior roots soon come to lie nearest the posterior median fissure; outside of these run the lumbar roots, outside of these the dorsal, and so on (Fig. 1).

In the lumbosacral region the columns of Goll and Burdach are not distinct, and the fibers from the posterior roots occupy a great part of the dorsal column; while in the cervical and dorsal regions the arrangement is such that the posterior median column (Goll) contains only fibers from the sacral, lumbar and lowest dorsal posterior nerve-roots, while the postero-external column of Burdach contains the fibers from the upper dorsal and cervical posterior roots (Fig. 1). Therefore in the lumbosacral region an incision may be made anywhere in the posterior column. It is best made a few millimeters from the median line so that injury may not be done to the descending tracts (triangle of Gombault and Philippe, from the third sacral nerve to the conus) in the sacral region; the oval bundle of

Flechsig (from the third and fourth lumbar nerves to the third sacral nerve), and the septomarginal bundle of Bruce and Muir (from the first to the third lumbar nerves) in the lumbar region. The incision should not be too near the posterior root zone, lest it damage the marginal fibers. The deeper the incision, the greater the probability of injury to fibers from the higher lumbar roots.

In the dorsal and cervical regions the incision should always be made in the posteromedian column, and the higher the level, the nearer should the incision be to the median line. In the upper and middorsal regions the incision is best made from 2 to 4 mm. from the median line, while from the level of the midcervical region upward it should be made very near the median line, preferably in the posterior median septum. The accompanying diagram (Fig. 2) will show the relations perfectly, and shows (in black) the region at different levels, where an incision can be made in the posterior column so as to injure only a few fibers from the sacral or lumbar posterior roots. It is important also to remember that in the sacral region there is very little white matter, the bulk of the spinal cord being formed

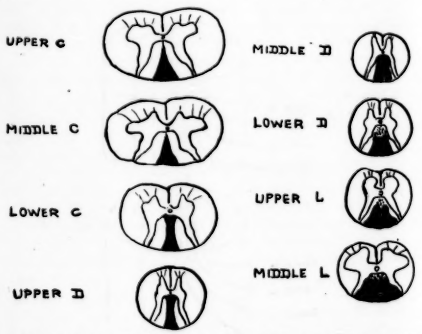

Fig. 2 (after Schultze).—The areas in the posterior column of the human spinal cord in which ascending degeneration occurs after injury to the sacral and lowermost lumbar posterior roots of both sides. Within these areas (shaded in black) an incision, made in the posterior columns, will cause a minimum of injury to nerve fibers and only very few if any symptoms.

of gray matter. In the thoracic region there is a relatively small amount of gray matter, while in the lumbar and cervical enlargements the gray matter, as well as the white columns, are of large size.

In rare instances it might be necessary to incise the cord on its anterior aspect. It is well known that the spinal centers for the various muscles of the body are not situated in single segments of the cord. The cells in the anterior gray horns which supply each single muscle lie in two or more segments of the cord, so that a small incision through the anterior median fissure and into the anterior gray horn should not cause a great amount of motor or sensory disturbance.

TECHNIC OF ASPIRATION AND INCISION OF THE CORD

Aspiration of the cord can be done with entire safety, provided that only the finest aspirating needle is used and care is taken not to injure any of the fine blood-vessels which enter the cord through the posterior median septum from the pia-arachnoid. A very fine scalpel, such as the von Graefe knife used by the ophthalmologist, is the best instrument to use for the incision. The pia-arachnoid should always be incised first and carefully grasped and raised with fine forceps. Then the proper part of the posterior column is selected and an incision less than 0.5 cm. long is made. The incision must be carefully deepened and enlarged, care being taken that it shall be in the axis of the cord. The enlarging and deepening of the incision is best done by means of a blunt instead of a cutting instrument. For this purpose an instrument like a small blunt strabismus hook is useful and by its means fewer fibers are divided and more are separated from each other.

In the case of an intramedullary tumor, the incision can usually be made into the most bulging part of the cord. When the tumor is exposed, no effort should be made to enucleate it, unless it is superficial and of small size. The growth should be left to extrude, to be removed at a later operation, according to the principles laid down by Dr. Beer and myself[7] in a previous publication. As described in that paper, the method of extrusion is a procedure by means of which the amount of injury done to the cord in the removal of a tumor is reduced to a minimum. Almost the entire process is left to Nature rather than to the manipulation of the surgeon. If at the second operation the tumor is found to be well extruded but still intimately connected with the interior of the cord, it is best not to attempt its removal, for fear of grave injury to the cord itself. In the case of an infiltrating growth, the incision into the cord may be made of considerable length so as to obtain a maximum decompressive effect. In these infiltrating growths, which often increase in size very slowly, the tumor mass itself may sometimes be incised with advantage.

The incision should always be made slowly and should be stopped as soon as distinct bleeding occurs. Sponging should be done with extreme care so as to make the smallest amount of pressure on the cord itself. When a cystic collection of fluid or a small area of softening is opened, no effort should be made to remove the fluid in the cavity by sponging or by pressure. It will be sufficient to lay the cavity open and to remove by means of small cotton sponges the fluid which escapes by itself from the cavity.

Needless to say, the cord should never be grasped with forceps; it can be raised from its bed by means of traction on the dural sac or the pia-arachnoid.

After the removal by the extrusion method of an intramedullary tumor, the attempt may be made to unite the delicate edges of the cut pia-arachnoid by a few extremely fine (single strands of split silk) sutures. No suture should ever pass through the cord tissue itself.

If the anterior surface of the cord has to be exposed, this can usually be satisfactorily accomplished if one posterior root of one side is divided. By means of the cut root the cord can be well lifted up and partly rotated on its own axis so that the anterior column is brought plainly into view. In several spinal operations in which the anterior surface of the cord had to be exposed, I accomplished this satisfactorily by means of division of one posterior root.

EXPOSURE AND RECOGNITION OF INTRAMEDULLARY LESIONS

A complete laminectomy is always necessary when a thorough exploration and examination of the cord is to be made. This means usually that at least three spinous processes and laminæ have to be removed, and that the laminæ shall be taken away well out to their articulating surfaces. While the operation of hemilaminectomy has

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an undoubted field of usefulness, a wider exposure of the cord is necessary whenever a tumor has to be removed or the cord tissue is to be invaded.

After the dura has been incised, the cord is exposed, and covered by the pia-arachnoid, which may be raised from the cord by cerebrospinal fluid. The pia-arachnoid should not be injured when the dural sac is opened, and should be incised separately.

Sometimes it is difficult to differentiate between a subpial growth closely adherent to the cord and a true intramedullary tumor. While some intramedullary growths break through the posterior surface of the cord and bulge out the pia, the majority cause a fusiform enlargement of the cord, and it is necessary to divide the pia-arachnoid and a thin layer of cord tissue before the tumor is exposed. After the pia has been incised and retracted, the surgeon may think that he is incising cord tissue when in reality he is incising the capsule of the tumor. With increasing experience, one learns to recognize the soft creamy-white character of the cord tissue. If, in addition, one can demonstrate that posterior nerve-roots emerge directly from the tissue through which the incision has been made, mistakes should not occur. In several instances of intramedullary tumor, I was at first in doubt as to whether I was really incising cord tissue, but in most of the cases of intramedullary disease in which I have operated, there was never any doubt that the cord substance was being invaded.

Careful palpation of the cord will often inform the operator that a solid tumor exists in the cord or that the enlargement is due to a collection of fluid. I have gained the impression, also, that retention of fluid both above and below the enlargement of the cord is much more frequent in the cases in which an intramedullary lesion exists.

SYNOPSIS OF CASES

CASE 1.—*Intramedullary gliosarcoma of cervical cord; laminectomy; incision of cord, extrusion of tumor; removal, recovery.* Result: very marked improvement with return of power in all extremities; patient returned to her work.[9]

CASE 2.—*Intramedullary glioma of cervical cord; laminectomy; incision; extrusion; removal.* Result: death in four hours from respiratory paralysis.[9]

CASE 3.—*Intramedullary sarcoma of cervical cord; laminectomy* (Dr. Beer); *extrusion, removal, recovery.* Result: marked improvement; later: recurrence, operation, removal of tumor mass, no improvement.[9]

CASE 4.—*Infiltrating tumor of upper cervical cord and medulla oblongata; laminectomy, incision of cord, partial extrusion of tumor; death after two days from respiratory paralysis.* Post-mortem examination showed that the tumor extended into the medulla and had grown through the posterior surface into the posterior cranial fossa.[10]

CASE 5.—*Hydromyelia; laminectomy, incision of cord draining cord cavity into subdural space.* Result: Improvement. J. H., aged 29, service of Dr. Collins at the New York Neurological Institute. Pain in back and across shoulders since May, 1910, followed by numbness in right arm and hand and increasing weakness in right upper extremity. Increasing weakness and stiffness in right lower extremity.

January, 1912: Power in upper extremities fair—left better than right. Biceps, triceps and wrist-jerks exaggerated on both sides; diminution in all three sensations on right side over distribution of cervical fourth to cervical seventh. Slight sensory disturbances on left side. Abdominal reflexes absent; knee- and ankle-jerks exaggerated, double ankle clonus, right Babinski. Right lower extremity is weaker than left, no sensory loss. *X*-ray and Wassermann negative. Lumbar puncture: clear yellow fluid with excess of globulin. After lumbar puncture, complete palsy of left lower and marked weakness of right lower extremity with absent knee- and ankle-jerks.

January 26: Laminectomy (Dr. Elsberg); removal of spinous processes and laminæ of third, fourth, fifth and sixth cervical vertebræ; dura does not pulsate; dural sac much enlarged; dura pia and cord bound together by fine adhesions. Cord covered by network of congested vessels. Cord much enlarged and soft; aspiration in median line withdraws clear, yellow fluid. Suture of muscles and skin, dry dressing.

February 12: Wound reopened; 4 cm. incision in posterior median septum; much yellow fluid evacuated; probe passed carefully downward in cord cavity for 6 inches. Edges of incision in cord gape widely. Suture of dura, muscles and skin in usual manner. Wound healed by primary union; at first exaggeration of all symptoms, then gradual return of power in lower extremities and in upper extremities, diminution in sensory disturbances.

May 7: The patient had been slowly improving; power in the lower extremities was good; knee- and ankle-jerks were lively and there was no ankle-clonus; power in the upper limbs was distinctly better; the patient could walk with a little assistance, and had some control of the bladder.

Result: Slow but marked improvement.

CASE 6.—*Intramedullary tumor of cervical cord, laminectomy; incision of cord to allow of extrusion of tumor; improvement.* W. P. Y., aged 30, service of Dr. Collins at the Neurological Institute. Two years' history of pain in back of neck followed by weakness of right and then of left upper extremity; increasing weakness of lower extremities.

April 28: Upper extremities very weak, right more than left; power in hands almost *nil;* tactile sensation much diminished over area of right cervical third to cervical seventh, slightly over cervical eighth to dorsal second; marked hypalgesia over same areas; complete thermanesthesia over same areas. Indefinite sensory disturbance over left upper extremity. Abdominal reflexes absent; both lower extremities very weak—right more than left. Knee-jerks and ankle-jerks exaggerated, right more than left; double ankle-clonus, double Babinski. No sensory disturbances, but patient says that right lower limb feels numb. No loss of deep muscle sense. *X*-ray and Wassermann negative. Rapid advance of symptoms under observation.

April 29: Laminectomy (Dr. Elsberg); removal of spinous processes and laminæ of fourth, fifth, sixth and seventh cervical vertebræ; dura does not pulsate. Incision of dura; no escape of fluid; cord much enlarged between cervical fourth and cervical seventh; at level of cervical sixth a transverse groove or depression extending all around cord; cord feels very soft; aspiration of cord negative. Exposed surface of cord of a reddish color; origin of left posterior roots surrounded by network of vessels; probe passed upward and downward within dural sac without meeting an obstruction. One centimeter incision of cord just to right of origin of posterior roots; incision deepened with blunt hook; at depth of several millimeters, yellow tumor; through intramedullary pressure incision in cord slowly spreads and lengthens with beginning extrusion of intramedullary tumor; marked bulging of tumor. Sutures of muscles and skin; removal of growth delayed to a second stage.

May 7: Wound healed by primary union; general condition excellent. Up to present, condition in lower extremities about the same as before operation; upper extremities somewhat weaker, but there is a decided improvement in touch and pain sense in right upper extremity.

CASE 7.—*Syringomyelia; gliosis cervicalis; laminectomy, incision of cord for decompressive purposes; recovery; marked improvement in power of upper extremities.* Louis P., aged 28, service of Dr. Bailey at Neurological Institute. Preoperative diagnosis: intramedullary tumor or syringomyelia. Marked weakness in upper extremities, almost complete loss of power in lower limbs. No loss of bladder control. Very marked loss of sensations of pain and temperature up to level of dorsal first area of distribution on both sides, most marked on right side. Very slight hypesthesia over same area.

9. Reported in Am. Jour. Med. Sc., November, 1911.
10. Reported in Ann. Surg., February, 1912.

Jan. 5, 1912: Laminectomy (Dr. Elsberg); removal of spines and laminæ of seventh cervical, first and second dorsal vertebræ, and incision of dura. Escape of moderate amount of cerebrospinal fluid; exposed part of cord considerably enlarged and of abnormally firm consistency. Incision 1 cm. long just to left of posterior median septum; cord substance bulged markedly through incision and was of a yellowish color, but no distinct tumor tissue to be seen. Condition evidently one of gliosis. Suture of dura, muscles, fascia, skin.

Uneventful recovery from operation. Flexion at knees somewhat improved; sensation in lower limbs much better.

May, 1912: Power in upper extremities greatly improved.

Result: Some improvement.

CASE 8.—*Diffuse meningomyelitis with intramedullary cyst; laminectomy; incision of cord, drainage of intramedullary cyst; no improvement. Death three months later from exhaustion; autopsy showed extensive lesions throughout dorsal and lumbar cord.* A. R., aged 37, service of Dr. Abrahamson at the Montefiore Home for Chronic Invalids. Five years' history of numbness of both hands, weakness in both legs, severe pains in upper extremities; symptoms steadily progressive. Old syphilitic infection. Wassermann positive; some improvement after injection of salvarsan and mixed treatment. Before operation, paralysis of both lower extremities, knee- and ankle-clonus, Babinski, Oppenheim. Tactile sensation diminished from level of sixth cervical, pain and temperature diminished from level of first dorsal.

Jan. 8, 1912: Laminectomy (Dr. Elsberg); removal of sixth and seventh cervical, first and second dorsal spines and laminæ; incision of dura, escape of small amount of fluid encapsulated between adhesions. Cord much enlarged over cervical seventh to dorsal first; cord feels fluctuating; incision of cord 2 cm. long opening into cyst cavity containing about 10 c.c. of clear fluid; walls of cavity are smooth and of a canary-yellow color. Numerous adhesions between dura and pia-arachnoid and cord. Diagnosis: meningomyelitis (specific), with cyst formation. Closure of wound in usual manner. Uneventful recovery except for slight wound infection.

Result: No improvement; tubercle bacilli in sputum; gradual emaciation with formation of bedsores; death April 10, three months after operation. Autopsy showed that the entire cord was the seat of extensive disease, numerous cavities in cord, diffuse thickenings of pia-arachnoid.

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ABSTRACT OF DISCUSSION

DR. PEARCE BAILEY, New York: Intramedullary surgery has been done previously as long ago as 1906, when Horsley in an article in a British journal advocated laminectomy and incision in the cord, such as was experimentally advocated by Allen of Philadelphia. But Dr. Elsberg, as far as I know, is the first to take the matter up systematically and consider its rather discouraging relations with the intramedullary growths and with the question of syringomyelia and hydromyelia. I think one thing that all neurologists ought to do more and more is to insist on special surgeons for these special and delicate operations. The majority of general surgeons are perfectly willing at any time to undertake laminectomy; but the more one sees of the laminectomies done by surgeons not skilled in this particular field and the lack of knowledge which they have of the parts, the more earnest and emphatic neurologists should be in insisting that experienced neurologic surgeons should do all the operations.

DR. CHARLES A. ELSBERG, New York: I think the amount of work the surgeon does within the cord should be reduced to the minimum; if it be a cyst to be opened or a tumor to be exposed, make the superficial incision with a sharp instrument, such as a small von Graefe knife, and deepen the incision by a blunt instrument. The surgeon cannot be as careful as is necessary, therefore he ought to do as little as possible under the circumstances and allow Nature to do her share.

The posterior route incision is very interesting to me, and very valuable, because it was the first region in which I attempted, in my anatomic studies, to make the incision. I found that that region very often is way around at the side, where one has to manipulate the cord too much. It means a great deal more manipulation of the cord than would otherwise be necessary, and I think what one would gain in anatomic correctness one would lose in the manipulations and necessary injury to the cord. Every time you touch the cord it means that you may be doing some harm; and if you work on the theory that every time you touch the cord, no matter how gently, you are doing harm, you will be traveling the only safe road in this special surgery.

THE IMMUNIZATION AGAINST TYPHOID OF EIGHT HUNDRED AND NINETY-EIGHT PATIENTS IN AN INSTITUTION

WITH DESCRIPTION OF THE TECHNIC EMPLOYED *

PAUL G. WESTON, M.D.
WARREN, PA.

That typhoid fever is endemic in institutions is generally accepted as a fact. That it is occasionally epidemic is a fact. It is also a fact that the source of infection is usually hard to find and frequently is not found.

The presence of a case of typhoid in this institution caused a general search for the origin of the infection, but it was not found. The case occurred in a building occupied for the most part by aged and demented patients. The routine biweekly examination of water and milk gave negative results, as before.

Inasmuch as the best way of dealing with typhoid epidemics is to prevent their occurrence, it was suggested by the superintendent (Dr. H. W. Mitchell) that all patients not over 50 years of age should be immunized.

The bacterin was made from a culture sent me through the kindness of Major F. F. Russell, U. S. Army. Large surface growths were made on agar, washed off with sterile normal saline solution, killed and standardized so that 1 c.c. contained either one billion or two billion bacilli. One-l[illegible]f c.c. was found to be the most convenient quantity to inject. The suspension was preserved with 0.2 per cent. trikresol.

Before the first inoculation and again ten days after the last one, a drop of blood, approximately 20 cm., was obtained from each patient, on a piece of Lautenslager filter-paper.

In order to inoculate so large a number of insane and more or less resistive patients, it was necessary to devise some rapid and efficient method.

TECHNIC OF INOCULATION

All inoculations were made at night after the patients had retired. Two assistants were required, one of whom went ahead rolling up the sleeves of the patients; the other remained with the physician and carried two wide-mouthed bottles of 30 c.c. capacity, one of which contained the bacterin and the other a piece of cotton saturated with tincture of iodin. The syringes used were Sub Q and Luer of 2 c.c. capacity. The same platino-iridium needle was used for all inoculations. The needle was drawn through the iodin cotton, and the iodin wiped off with cotton saturated with alcohol. The arm was cleansed with alcohol at the insertion of the deltoid muscle.

Thus patients sleeping in dormitories were inoculated at the rate of twenty-seven seconds per man. In the wards, in which the patients were in separate rooms, it required thirty-nine seconds per man. Many of the

* From the Pathologic Laboratory of the State Hospital for the Insane, Warren, Pa.

patients were asleep and did not know until the next morning that they had been inoculated.

In all, 2,694 inoculations were made. The first dose was one-half billion bacilli, and the second and third each one billion. The interval between doses was ten days. Only one of the 2,694 injections was followed by an abscess; this, however, is one too many.

The reactions were classed as follows:

None: An area of hyperemia, 5 to 7 cm. in diameter, with no edema.

Mild: An area of hyperemia with slight edema, and temperature not over 100.

Moderate: Marked hyperemia and edema extending to elbow, with a temperature not over 103.

Severe: Marked hyperemia and edema, chills, pain in the back and legs, and a temperature over 103.

It is obvious that little reliance can be placed on subjective symptoms reported by insane patients. Except in one case the objective symptoms alone were recorded. This patient showed a severe reaction after each dose, and was unable to work the following day. Many of the patients worked in the house or about the farm; others were digging a ditch.

TABLE OF REACTIONS

Dose.	None.	Mild.	Moderate.	Severe.
1	883	3	11	1
2	880	6	11	1
3	895	1	1	1

TECHNIC OF AGGLUTINATION TESTS

It was assumed that each piece of filter-paper contained 20 cm. of blood, which is a fairly approximate estimate, and that the blood was one-half serum.

The blood-stained part was cut from each piece of paper and placed in a test-tube, 10 by 100 mm., and enough distilled water was added to make a serum dilution of 1 to 125. Capillary glass tubes 10 mm. long were used in making the agglutination tests. These tubes were marked with a blue wax pencil in such a manner that mixtures of the blood solution and the typhoid suspension in equal parts, 1 to 4, or 1 to 8, could be made by aspirating the blood solution to a given mark on the tube and the typhoid suspension to another. The contents of the tube were blown out on a watch-glass, mixed and aspirated into the tube, the end of which was then sealed in the flame. Three dilutions were made from each serum, 1 to 250, 1 to 500, and 1 to 1,000; an additional dilution of 1 to 10,000 was made from every tenth specimen examined.

Small wooden boxes 30 cm. in length and 4 cm. in width and depth were filled with dry sand. The capillary tubes were arranged in the sand in rows of three, each row containing the three different dilutions of the same serum. It required thirty seconds to put up each tube. Agglutination tests were made, therefore, at the rate of two per minute. The boxes were set aside at room temperature until the next morning, when the results were read. Only those tubes showing heavy flocculi of clumped bacilli were called positive.

Blood taken before inoculation was treated in the same way, but only one dilution was made, 1 to 250.

RESULTS OF AGGLUTINATION TESTS

Blood taken before inoculation failed in every case to cause agglutination at a dilution of 1 to 250.

Blood taken ten days after inoculation gave the following results: Positive at 1 to 250, 100 per cent.; positive at 1 to 500, 97.7 per cent.; positive at 1 to 1,000, 92.25 per cent. At the dilution of 1 to 10,000 only seventy-four tests were made; these were all positive.

BACTERIOLYTIC PROPERTIES OF SERUM

Unfortunately, no bacteriolytic tests were made prior to inoculation. Specimens of blood obtained ten days after the last inoculation from twenty patients taken at random were used to determine the presence of bacteriolytic amboceptors. The method used was that of Stern and Karte.[1] All twenty were bactericidal at a dilution of 1 to 20,000. Higher dilutions were not made.

I wish to thank the resident physicians for their cooperation. I am especially indebted to Mr. Ellis Winters, undergraduate medical student, Philadelphia, for assistance in making both the inoculations and the agglutination tests.

THE QUANTITATIVE EXAMINATION OF ALBUMIN IN THE SPUTUM IN PULMONARY TUBERCULOSIS

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A review of the subject of the albumin reaction in the sputum in pulmonary tuberculosis shows that a qualitative examination has been made by Sahli, Rogers, Raw, Fishberg, Brown and Ross and others in something over 1,000 cases. They are practically all agreed (1) that albumin is usually present in the sputum in pulmonary tuberculosis; (2) that in doubtful cases of pulmonary tuberculosis the presence of albumin in the sputum with a positive von Pirquet reaction would justify one in making a positive diagnosis; (3) that the intensity of the albumin reaction is, as a rule, proportional to the stage of the disease; (4) that albumin occurs in the sputum in certain other pulmonary affections, namely, pneumonia, edema, pleurisy with effusion, and emphysema with dilatation of the heart.

That all are agreed that the albumin reaction usually occurs in the sputum in pulmonary tuberculosis should prove its importance in the diagnosis of this disease; and apparently there is some relation between the intensity of the albumin reaction and the existing lung condition which should be studied to find the importance, if any, from a prognostic point of view. For this reason a quantitative examination of the albumin in the sputum in pulmonary tuberculosis has been undertaken, and is reported in this article.

TECHNIC

Wide-mouthed bottles are sent to patients, who are instructed to furnish about 20 c.c. of sputum as free from saliva as possible. On return to the laboratory the sputum is measured, and a 3 per cent. acetic acid solution is slowly added while the sputum is agitated until the mucin is coagulated. Then enough distilled water is added to make a 33⅓ per cent. dilution of the sputum. After thorough shaking this is filtered through several layers of gauze, a few drops of the acetic acid solution are added to the filtrate to insure complete precipitation of the mucin, and this mixture filtered through filter paper. A part of the filtrate may be tested by any of the tests for albumin. If more than a trace occurs a quantitative test for albumin is made with Esbach's tube in the same manner that a quantitative

1. Stern and Karte: Berl. klin. Wchnschr., 1904, xli, 213.

test for albumin in the urine is made, and the reading on the tube multiplied by three, as this is the dilution of the sputum. Esbach's test in urinalysis is not accurate and in the examination of the sputum it is obvious that it would be less so; but with this chance of some variation with Esbach's tube in getting the amount of albumin in the sputum, it is decidedly more practicable than using any of the other quantitative tests for albumin and far more accurate than judging of the amount of albumin precipitated in a test-tube.

This test can be made in any laboratory and requires no special skill and little time, so that it is practicable under nearly all conditions. The sources of error one should remember are: (1) that if much saliva is present with the sputum for examination this saliva may give a slight albumin reaction; (2) that all the mucin should be carefully precipitated and filtered out before testing for albumin.

The sputa of 168 patients at the U. S. P. H. S. Tuberculosis Sanatorium have been examined by the above method. Six cases were incipient; one of these patients had active lesions and showed 0.35 per cent. albumin; three months later, when marked improvement had taken place in both physical signs and constitutional symptoms, only a trace of albumin was present; four cases were improved and showed a trace; and one, an arrested case, gave a negative albumin reaction (sputum examined twice). The sputum of moderately advanced and far-advanced cases gave reactions varying from 1 per cent. albumin to a negative reaction, the amount depending on activity of the process.

Thirty-three cases with active lesions gave reactions of 0.2 per cent. albumin or more. Eighty-eight cases which had been improved under treatment and were considered only slightly active gave less than 0.2 per cent. There were, however, seven active cases showing only a trace of albumin and six with reactions from 0.1 to 0.2 per cent., and eleven slightly active cases showing more than 0.2 per cent.

Of twenty-one arrested cases showing no tubercle bacilli in the sputum, fourteen had a trace of albumin in the sputum and seven gave a negative reaction.

All sputa examined of patients whose condition had not become arrested gave a positive albumin reaction. The amount of sputum in twenty-four hours of patients giving a positive reaction was in no way parallel to the percentage of albumin. Neither the duration of the tuberculous condition nor the involvement of one or both lungs was any factor in the intensity of the reaction. A study of the cases showed that those having active lesions with constitutional symptoms usually had 0.2 per cent. or more albumin in the sputum, while improved cases had a less intense albumin reaction.

CONCLUSIONS

1. The quantitative examination of albumin in the sputum in pulmonary tuberculosis does not require much time and is easy to apply, making it practicable even outside of sanatoriums.

2. All patients with active pulmonary tuberculosis give a positive albumin reaction.

3. Arrested cases never have more than a trace of albumin in the sputum, or they may give a negative reaction.

4. Most active cases, whether incipient, moderately advanced, or far advanced, show 0.2 per cent. or more albumin.

5. Improved (slightly active) cases usually have less than 0.2 per cent. albumin.

UNILATERAL KIDNEY HEMORRHAGE CONTROLLED BY INJECTION OF HUMAN BLOOD-SERUM *

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Because of the brilliant results that Welch obtained when using normal human blood-serum in hemophilia neonatorum, in December, 1911, I suggested the trial of human blood-serum in a case of unilateral renal hemorrhage. The results in this case were as immediate and extraordinary as in Welch's cases.

History.—The patient, a man aged 36, said that he had been suffering from Bright's disease for a period of three or four years. During this time he has had hemorrhages from various places: from a pimple on the chest, which he scratched when asleep; from the trachea; profusely and often from the nose. Three months before I saw him the patient had had an attack of severe pain in the left side of the abdomen. He presented evidence of shock, and was taken to the hospital by his physician. He rapidly became worse. There was distention of the abdomen, which his physician thought was due to an intestinal obstruction. On laparotomy, a large amount of free blood was found in the region of the descending colon, and a blood tumor as large as an orange was seen in the wall of the colon. This was evacuated and a bleeding artery found. The wound was drained and slow recovery followed. During the operation it was discovered that his left kidney was about three times the normal size. When the patient left the hospital there were albumin and casts in his urine. Shortly after this he began to have severe hematuria.

Examination.—When I saw the patient his urine was red with blood. I cystoscoped him and saw the bloody urine jetting from the right ureter. As his history was that of a "bleeder," and as the bladder was entirely normal, I did not attempt either to catheterize the ureters or to exclude tuberculosis or stone of the kidney. The total output of phenolsulphonephthalein was 9.5 per cent. the first hour and 46.5 per cent. the second hour. I sent the patient back to his physician, Dr. C. S. Lamb, New Haven, Conn., suggesting that normal human blood-serum be injected.

Treatment.—The patient had three brothers. Dr. Lamb used all three of them in obtaining blood for serum, in the last injection combining the serum of two brothers. It was thought that the blood of one brother, whose blood was used for the first serum injection, coagulated much faster than the blood of the other two brothers. After the first injection of 20 c.c. the bleeding immediately stopped. This was followed in about four days with 50 c.c. of serum and three days later with 130 c.c. The patient had absolutely no reaction following any of the injections. An examination of the urine after the injection showed no albumin.

Result.—At the present date, six months after the use of the serum, his physician reports that the patient has never lost one drop of blood since the first injection.

I wish briefly to touch on some of the problems of the injection of serum and of the technic of injection.

1. *The Class of Cases in Which Serum Injections Should Be Tried.*—First, in the bleeder. Second, in that class of cases variously termed the bleeding of unilateral nephritis, renal papillitis or varicose veins of a kidney papilla. In seventy-three of this latter class, reports of which I have collected from the literature, there was an operative mortality of 15 per cent. In the attempt to cure the disease, twenty-seven kidneys were sacrificed in this series of seventy-three cases. The non-operative measures, internal administration of turpentin, injection of epinephrin into the kidney pelvis,

* Read at the Twenty-Sixth Annual Meeting of the American Association of Genito-Urinary Surgeons, Philadelphia, June 7, 1912.

seem occasionally to be of benefit but more often they are not. While it is difficult to say if the serum would have any effect in these cases it should certainly be tried, both by subcutaneous injection and by direct application of the serum to the bleeding-point in the kidney pelvis.

2. *Hemolytic Test.*—Human blood-serum is injected in small quantities at first, 10 c.c. to 20 c.c., and, because it is injected subcutaneously, takes some time to become diffused throughout the body. If there be any reaction, any "serum-sickness," another blood-serum may be used and hemolytic tests be made. If the blood be obtained from any relative there is no fear of serum-sickness and one may give as large a dose as wished.

Welch makes the general statement: "Human serum never gives serum-sickness or causes anaphylaxis in the human subject." Certainly serum other than human is given every day without hemolytic tests as, for example, diphtheria antitoxin. While serum-sickness occurs in 20 per cent. of patients receiving antitoxin, fatal results are rare.

3. *Method of Collecting Blood for Serum.*—Welch gives a picture of an apparatus for collecting blood, which consists of a glass jar having a cork stopper with two holes to admit two glass tubes. One of these tubes goes to the needle which punctures the vein, and the other is for suction when drawing the blood. In emergency, the blood could be collected in a sterile test-tube and the serum taken from that.

4. *Method of Giving Serum.*—If the renal hematuria be part of a diathesis, if the patient be a bleeder, then unquestionably the serum should be injected subcutaneously. If the bleeding should be due to a nephritis, unilateral or bilateral, to a papillitis, to varicose veins of the kidney pelvis, small amounts of serum might be injected through a ureteral catheter.

The efficiency of direct application of blood or blood-serum to a bleeding-point was first discovered by Bienwald,[1] who applied the grandmother's blood to a bleeding cut on a child's head. The child was rapidly becoming exsanguinated and the bleeding stopped immediately after the application. If the serum be injected through a ureteral catheter, 5 or 10 c.c. would be sufficient and diphtheria antitoxin or any other handy serum might be used.

5. *Quantity of Serum.*—The initial dose depends on the urgency of the case. In an emergency, I should not hesitate to inject 40 or 50 c.c. of any relative's serum as the first dose, and, if no reaction ensues, to follow this up in five or six hours with three or four times this amount. The amount of serum that can be injected without injurious reaction is given by Welch. In one case he gave to a dying new-born child 10 c.c. of serum three times in the first day. In another case he injected 209 c.c. in five days.

6. *Duration of Cure.*—As yet no one seems to know how long the one-time bleeder will remain a non-bleeder after the injection of serum. It is possible that the quantity of serum administered has an effect on this. My patient was given 20 c.c. of rabbit's serum six days after the operation for intestinal bleeding with the object of controlling any subsequent hemorrhage. Six weeks after this injection bleeding from the kidney began.

7. *Other Effects and Uses of Serum.*—In addition to its effect on the coagulability of the blood, it is an accepted fact that human blood-serum has a distinct bactericidal action.

If the kidney bleeding is caused or accompanied by infection the serum will help overcome this infection. A third virtue is its nutritive value; the patient has had just so much good food. This, of course, is of much more importance in cases of hemophilia neonatorum.

109 East Thirty-Fourth Street.

1. Bienwald: Deutsch. med. Wchnschr., 1897, xxiii, 28.

SPONTANEOUS HEMORRHAGE OF THE NEW-BORN WITH RECOVERY

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Spontaneous hemorrhage of the new-born is so obscure and so fatal a disease that any experience pointing the way out is worth recording. All treatment detailed in the literature of the subject is so difficult a technic as to require either special skill or special apparatus or both. In view of these facts the following case is worthy of report:

Mrs. R., aged 42, white, was delivered rapidly and easily of her ninth child at 4 p. m., Aug. 26, 1912. She was not in labor more than thirty minutes and the baby was born fully half an hour before the attendant's arrival. The child, a girl, weighed 9½ pounds and appeared perfectly well and normal. Of the eight children previously born, two had died, one, the first born, of some bowel complication at four months; and one, the fourth, of hemorrhage on the fourth day. The ninth child was well for thirty-six hours when the nurse found her listless and flaccid. On examination it was discovered that a large quantity of blood had been passed by the bowel. Some of the blood was red but much the larger part was dark and tarry-looking. I saw her at 9 a. m., August 28. The child was then of a deep lemon color and in profound shock. She had vomited some blood. During the day she had half a dozen bloody stools and at 9 p. m. the pulse was rapid and weak. She had been very languid and relaxed all the day, though she had taken the breast at three-hour intervals. At 9 p. m. she was given about 15 c.c. of normal horse-serum subcutaneously.[1]

August 29 and 30 small amounts of blood were passed, but each time the amount was less, running possibly from half an ounce down to a teaspoonful. At 7 p. m. on the 30th the child was given 20 c.c. normal horse-serum and from that time on there has been no blood. Both injections were made into the buttocks, one on each side. September 1 the stools were the usual yellow color of a nursing infant and have continued so ever since. September 16, when last seen, she was a splendid specimen of baby, skin clear and healthy and nursing well, bowels regular, stools natural and every evidence of perfect health.

Twenty c.c. is a fairly large subcutaneous dose for an infant and in this case put the skin on the stretch decidedly. This tension subsided rapidly and in an hour's time the tumor had disappeared.

DIPHTHERITIC SERUM USED TO CONTROL BLEEDING IN A HEMOPHILIAC

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I report this case because diphtheritic serum was used, no other horse-serum being obtainable, and because I believe that great benefit was received, both from the serum and from the calcium lactate used.

The patient, L. R., aged 16, was admitted to my service at the Spearville Hospital, Thursday, July 18, 1912, at noon. He had been bleeding for ninety hours from a cut just above the right upper central incisor, received by being struck with a bracelet on a young woman's arm when falling out of a hammock. Two of the mother's brothers suffered from hemophilia. The patient was bleeding profusely and much weakened from loss of blood when admitted. He was given,

1. EDITOR'S NOTE: The use of horse-serum has been noted in New and Nonofficial Remedies for a number of years. In the 1912 edition it will be found on page 222. While human serum or blood is to be preferred, horse-serum will do in an emergency.

immediately, 3,000 units of diphtheritic serum, hypodermatically, no other horse-serum being at hand; a piece of absorbent cotton was placed over the cut and the lip drawn down over this. There was a little bleeding after this until 7 p. m., when pressure was applied and 30 grains of calcium lactate were given by mouth. There was slight bleeding between the teeth until the following morning. Friday and Saturday he was given 180 grains of calcium lactate. The bleeding was easily controlled by placing a piece of absorbent cotton between the gum and lip; hemorrhage was less each time the cotton was changed, and by 6 o'clock Saturday evening it had ceased entirely. All treatment was discontinued after Sunday morning, except the administration of iron and arsenic for the anemia. There has been no other hemorrhage to date.

A CASE OF HEMOPHILIA

E. B. CLAYBROOK, M.D., CUMBERLAND, MD.

Paul C., a healthy infant, was born of healthy parents, on April 25, 1911. There is no family history of a tendency to hemorrhage. The infant was circumcised at 10 days old, and this simple operation was followed by a most persistent oozing, which continued for a week, in spite of various external applications and internal remedies. The blood clotted freely on the dressings, but the wound edges continued to weep until the child was almost exsanguinated. The bleeding gradually stopped after a week, and the baby regained his strength and color.

On July 27, 1912, at the age of 15 months, he fell and cut his tongue on his teeth. The cut was only as wide as two teeth, and was not deeper than a third the thickness of the tongue. I was called on the 28th and found that the tongue had oozed all night, and that the baby had swallowed a half pint of blood which he promptly vomited, frightening the mother very much. I placed two linen stitches, so closing the cut as to make it almost invisible, and left feeling that all would be well. In two hours I was called and told that the child was bleeding as badly as ever. I then called the doctor who had circumcised him, and after consulting with him, the child was moved to the hospital, and under anesthesia, the wound was seared with the actual cautery, and a catgut suture passed through the tongue from below with a round needle, and then introduced at the opposite side of the cut, and brought out underneath the tongue. Under the loop was placed a tab of gauze and the suture tied down tight, from below. It was thought that this would be sufficient, but to be on the safe side the child was given 20 c.c. of normal serum under the skin, and was put to bed and given calcium chlorid every two hours, and the tongue touched at the same intervals with adrenalin chlorid (epinephrin). This seemed to do the work, and on July 30 the patient was taken home with no apparent bleeding for forty hours, and in good condition.

Early the next morning, I was called, to be told that the child had vomited a pint of blood, and was still bleeding. He was brought back to the hospital at once and the mouth cleaned of a large amount of clotted blood, which was as firmly clotted as any I ever saw. The child was as white as wax, and in poor condition. The suture in the tongue was cut, and another put in with tabs of gauze both on top and under the tongue, and another 20 c.c. of normal serum given, and the child put to bed with constant proctoclysis. He did fairly well and the wound did not ooze much more, but he was desperately weak and did not rally in spite of saline and stimulants. His temperature went to 102.5, and he gradually slipped away, and died early in the morning of August 2. It might seem that, under the circumstances, transfusion was indicated, but when we considered that the wound was very shallow, and only three-eighths of an inch long and that it was almost impossible to stop the bleeding, we did not have sufficient faith and courage to make the necessary incision to do transfusion.

It seems to me, from observation of this case, and one other, that our conception of this condition is wrong. I do not believe that the trouble is with the blood itself, for the clots are as solid as any in any other patient, and in this case filled the mouth, and were quite hard to break up.

It seems to me that possibly the correct theory is that, in the normal individual, when a vessel is wounded, the injured intima secretes or throws out a material that agglutinates and seals up the broken ends of the vessels, and thus prevents the constant welling up of blood as seen in the hemophiliac and that this vital function is lacking in the vessels of these patients.

CARBON MONOXID POISONING WITH ACUTE SYMPTOMS, RELAPSE WITH PSYCHOTIC SYMPTOMS, AND COMPLETE RECOVERY *

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The patient was a single woman, aged 45 years, domestic, born in Ireland. Family and personal histories were negative as to nervous and mental disorders. She was found on the morning of Nov. 3, 1909, in a state of coma caused by the escape of illuminating gas from a broken fixture in a room. She did not regain consciousness for four days, during which time constitutional symptoms were noted. The patient recovered from the acute effects of the poison and was discharged from the hospital ten days later as recovered. Several days afterward she returned to work. Three weeks later the patient developed a psychosis and was admitted to the Government Hospital for the Insane, Dec. 10, 1909.

She was semistuporous; she gave her name but other questions were incorrectly answered. She showed falsifications of memory, related confabulatory experiences, was lacking in power of attention and concentration, could not carry on an intelligent conversation, gave her replies incorrectly as a product of her own imagination, had a mistaken identity of persons, had a retrograde amnesia, and there was a tendency to causeless laughter. The confusion, with the above-mentioned mental manifestations, continued for one month when improvement was noted. At this time there was an anterograde amnesia which extended over a period of three months and included the time following the acute toxic manifestations from which she was supposed to have been well, when she went about her usual duties.

Physical examination showed a slight systolic murmur over the apex of the heart; gums inflamed; tongue coated and eroded on sides and tip; pyorrhea alveolaris marked; incontinence of urine and feces; coarse tremors of tongue and extended hands; gait unsteady, Romberg present; all movements incoordinate and ataxic; deep reflexes exaggerated; wrist- and ankle-clonus present; marked Babinski; superficial reflexes diminished; anesthesias over whole surface of the body; no reaction to light or deep-pin-pricks; inability to distinguish heat and cold; astereognosis present; impairment of the senses of taste and smell. Wassermann reaction with the blood-serum and spinal fluid was negative. There was one cell to each cubic millimeter of spinal fluid. Urinalysis was negative. With gradual changes from the above-described condition, all neuropathologic symptoms had practically disappeared in about six weeks' time.

Four months after the intoxication, the patient was discharged as completely recovered. As far as I have been able to learn, her condition since that time has not changed. Shortly after her discharge she left this country, and the contents of her letters would indicate that she has as yet undergone no mental change since that time.

For the past twenty-five years the deaths by gas poisoning have been steadily increasing, and this increase has been due in the large cities to the manufacture of illuminating gas by a method known as "water-gas." As illuminating gas has come to be a serious cause of death, a point has been reached when it behooves the health authorities and others interested in the subject to consider what steps can be taken

* Abstract of a paper presented at the International Congress on Hygiene and Demography.

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to curtail this mortality. The International Association for Labor Legislation has prepared a plan for the protection of workmen exposed to the dangers of industrial poisons in order that they might be able to secure adequate legislation. In this connection a committee of this society has compiled a list of the industrial poisons. The United States Department of Commerce and Labor published this tabulated list in which each poison is considered separately, as follows: designation of the substance, branches of industry in which poisoning occurs, mode of entrance into the body, and the symptoms of poisoning, acute and chronic. Carbon monoxid poisoning is fully dealt with in this respect.

In the complete paper the work done along these lines is reviewed. In connection with this case, however, the most interesting reports in the literature are those commenting on the amnesia, the peculiar character of the delirum which sometimes simulates the Korsakoff syndrome, the emotional disturbance and the correlation between it and the possible organic lesions of the basal ganglia. Particular attention is called to the quite frequent peculiarity of this toxemia, that is, the occurrence of a psychosis developing some weeks after apparent recovery from the acute poisoning. This is an important matter which has never been given due consideration in the discussion of this intoxication, and in connection with the industrial accidents and workmen's compensation acts. It is a subject which should be duly emphasized and recognized so that the significance of a mental disease developing some weeks after gas-poisoning may receive its proper valuation. This woman recovered; but whether the restoration is permanent is a question concerning which authorities have not been able to decide, owing to the fact that no available reports have been made on the subsequent course of the disease.

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Therapeutics

DISTURBANCES OF THE HEART

Of prime importance in the treatment of diseases of the heart is a determination of the exact, or at least approximately exact, condition of its structures and a determination of its ability to work.

This is not the place to describe its anatomy or its nervous mechanism or the newer instruments of precision in estimating the heart function, but they may be briefly itemized. It has now been known for some time that the primary stimulus of cardiac contraction generally occurs at the upper part of the right auricle, near its junction with the superior vena cava, and that this region may be the "timer" of the heart. Though a wonderfully tireless mechanism, this region may fall out of adjustment, and the stimuli proceeding from it may not be normal or act normally. It has been shown recently that not only must there be perfection of muscle, nerve and heart circulation, but that the various elements in solution in the blood must be in perfect amounts and relationship to each other for the heart stimulation to be normal. It has also been shown that if for any reason this region of the right auricle is disturbed, a stimulus or impulse might come from some other part of the auricle, or even from the ventricle, or from some point between them. Such stimulations may constitute auricular, ventricular or auriculoventricular extra contractions or extrasystoles, as they are termed. In the last few years it has been discovered that the auriculoventricular bundle, or "bundle of His," has a necessary function of conductivity of auricular impulse to ventricular contraction. A temporary disturbance of this conductivity will cause a heart-block, an intermittent disturbance will cause intermittent heart-block (Stokes-Adams disease), and a prolonged disturbance, death. It has also been shown that extrasystoles, meaning irregular heart action, may be caused by impulses originating at the apex, at the base or at some point in the right ventricle.

Anatomists and histologists have more perfectly demonstrated the muscle fibers of the heart and the structure at and around the valves; the physiologic chemists have shown more clearly the action of drugs, metals and organic solutions on the heart; and the physiologists and clinicians with laboratory facilities have demonstrated by various new apparatus the action of the heart and the circulatory power under various conditions. It is not now sufficient to state that the heart is acting irregularly, or that the pulse is irregular; the endeavor should be to determine what causes the irregularity, and what kind of irregularity is present.

A moment may be spent on clinical interpretation of pulse-tracings. It has recently been shown that the permanently irregular pulse is due to fibrillary contraction, or really auricular fibrillation — in other words, irregular stimuli proceeding from the auricle — and that such an irregular pulse is not due to disturbance at the auriculoventricular node, as believed a short time ago. These little irregular stimuli proceeding from the auricle reach the auriculoventricular node and are transmitted to the ventricle as rapidly as the ventricle is able to react. Such rapid stimuli may soon cause death; or, if for any reason, medicinal or otherwise, the ventricle becomes indifferent to these stimuli, it may not take note of more than a certain portion of the stimuli. It then acts slowly enough to allow prolongation of life, and even considerable activity. If such a heart becomes more rapid from such stimuli, 110 or more, for any length of time, the condition becomes very serious. Digitalis in such a condition is, of course, of supreme value on account of its ability to slow the heart. Such irregularity perhaps most frequently occurs with valvular disease, especially mitral stenosis, and in the muscular degenerations of senility, as fibrosis.

Lewis[1] believes that 50 per cent. of cardiac arhythmia originates in muscle disturbance or incoordination in the auricle. These stimuli are irregular in intensity and the contractions caused are irregular in degree. If the wave lengths of the pulse-tracing show no regularity — if, in fact, hardly two adjacent wave-lengths are alike — the disturbance is auricular fibrillation. Injury to the auricle, or pressure for any reason on the auricle, may so disturb the transmission of stimuli and contractions that the contractions of the ventricle are very much fewer than the stimuli proceeding from the auricle. In other words, a sort of heart-block may occur. Various stimuli coming through the pneumogastric nerves, either from above or from the peripheral endings in the stomach or intestines, may inhibit or slow the ventricular contractions. It seems to have been again shown, as was earlier understood, that there are inhibitory and accelerator ganglia in the heart itself, each subject to various kinds of stimulation and various kinds of depression.

Of course it is generally understood that children have a higher pulse-rate than adults; that women normally have a higher pulse-rate than men at the same age; that strenuous muscular exercise, frequently repeated, without cardiac tire, while causing the pulse to be rapid at the time, slows the pulse during the interim of such exercise and may gradually cause a more or less permanent slow pulse. It should be clinically

1. Lewis: Brit. Med. Jour., 1909, ii, 1528.

remembered that athletes have slow pulse, and the severity of their condition must not be interpreted by the rapidity of the pulse. Even with high fever the pulse of an athlete may be slow. It is well known that high blood-pressure slows the pulse-rate; that low blood-pressure generally increases the pulse-rate; that arterio-sclerosis, or the gradual aging of the arteries, slows the pulse, except when the cardiac degeneration of old age makes the heart again more irritable and more rapid. The rapid heart in hyperthyroidism is also well understood. It is not so frequently noted that hypersecretion of the thyroid may cause a rapid heart without any other tangible or discoverable thyroid symptoms or symptoms of hyperthyroidism. Bile in the blood almost always slows the pulse.

As above suggested, new and better instruments have been invented, and laboratory and clinical studies of tracings of heart and vessels have increased our knowledge of the varying blood-waves and of the pressure under which the blood is distributed. The development of these instruments of precision started with the sphygmograph of Marey, in 1860. While the sphygmomanometer was discovered in the first third of the last century, an instrument was not devised or used clinically until perhaps first in 1887 — the instrument of von Basch. Soon followed Marey's and Potain's instruments, then Ludwig's suggestion of the graphic method of study of blood-pressures and pulse-tracings, then the finger-ring suggestion which is not very accurate, then the Riva Rocci blood-pressure apparatus and the modifications that followed, such as Cook's, Sahli's, von Recklinghausen's, Janeway's, Erlanger's, Satterthwaite's and Faught's, all based on the reading of the mercurial pressure, and the Tycos air instrument gauged to mercurial pressure.

From the careful clinical studies of blood-pressure it has been shown that the pressure varies greatly with the age, sex, different physical and mental conditions, position and with disease. The pressure in a child may be about 100 mm. of mercury, in a woman about 120, and in a man about 130. It is now recognized that accuracy requires the taking of diastolic as well as systolic pressure, and that however carefully taken, errors in reading and interpretation are likely to occur. It is also recognized that whether or not a given pressure, if not excessive, is decidedly abnormal to a given patient must be determined individually; and it may be asserted here that a pressure deemed too high should not always be tampered with.

Wonderful accuracy in determining heart action has been developed by Crehore of New York by his method of light-interference rings. Crehore's registrations of heart action by this method and Meara's clinical interpretation of these cardiograms represents scientific work of a high order.

A short and clear exposition of the various polygraphic methods of studying circulatory ability is presented by Satterthwaite[2] of New York. As the number of circulatory tracings is multiplied, careful readings of the composite picture give greater and greater accuracy to the diagnosis and the selection of the advisable treatment. Polygraphy means two or more tracings taken simultaneously, as that of the heart, carotid, jugular, radial, liver or any two of them. The electrocardiograph, when used by an expert, becomes the most accurate of the clinical circulatory instruments. This has been well shown by Lewellys F. Barker of Baltimore. If the apex, carotid, radial and jugular tracings are superimposed the relationship of each one to the others is graphically demonstrated. As above stated, Satterthwaite's article is brief but illuminating in its explanation of graphic analysis of the circulation.

The interpretation of the arterial tracing shows that the nearly vertical up-stroke is due to the sudden rise of blood-pressure caused by the contraction of the ventricles. The long and irregular down-stroke means a gradual fall of the blood-pressure. The first upward rise in this gradual decline is due to the secondary contraction and expansion of the artery; in other words, a tidal wave. The second upward rise in the decline is called the recoil, or the dicrotic wave, and is due to the sudden closure of the aortic valves and the recoil of the blood-wave. The interpretation of the jugular tracing, or phlebogram as the vein tracing may be termed, shows the apex of the rise to be due to the contraction of the auricle. The short downward curve from this apex means relaxation of the auricle. The second lesser rise, called the carotid wave, is believed to be due to the impact of the sudden expansion of the carotid artery. The drop of the wave-tracing after this carotid rise is due to the auricular diastole. The immediate following second rise not so high as that of the auricular contraction is known as the ventricular wave, and corresponds to the dicrotic wave in the radial. The next lesser decline shows ventricular diastole, or the heart rest. A tracing of the jugular vein shows the activity of the right side of the heart. The tracing of the carotid and radial shows the activity of the left side of the heart. After normal tracings have been carefully taken and studied by the clinician or a laboratory assistant, abnormalities in these readings are readily shown graphically. Especially characteristic are tracings of auricular fibrillation and those of heart-block.

These preliminary suggestions for a careful study, both theoretically and clinically, of circulatory disturbances are to urge a more careful interpretation of the symptoms and signs in patients who may not show very evident symptoms of cardiac disability or insufficiency. As recently so well expressed by Dr. Charles L. Greene[3] many a patient who has circulatory debility is branded with the "misnomer of neurasthenia." Many a patient is treated for gastric indigestion, or intestinal disturbances, or muscular rheumatism, or myalgias, or "malaria," or general debility, or even for the more scientific interpretation of intestinal fermentation and putrefaction (the latter of which, of course, must often be corrected) when the trouble really is cardiac tire and cardiac muscular weakness.

The pulse is not necessarily irregular, the heart may show no manifest enlargement and no murmurs, and yet many of the symptoms which occur under the conditions above named will be corrected when the heart is aided or given rest. A slight exercise test for the heart will often demonstrate weaknesses or inability to sustain effort, when the examination of a patient after some rest or without any exertion would seem to show that the circulation was perfectly normal. Many an ache, referred not only to the left chest but to the right, not only toward the left shoulder but to the right, not only toward the left side but around over the right side of the liver, or down into the abdomen, or up into the throat, with the diagnosis of the cause most uncertain, will be

2. Satterthwaite, Thomas E.: Month. Cyclop. and Med. Bull., April, 1912

3. Greene, Charles L.: THE JOURNAL A. M. A., Aug. 31, 1912, p. 685.

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corrected when the heart is given a little more physical rest by resting the patient, or by the administration of small doses of digitalis. In fact, with the cause of such disturbances so uncertain, the therapeutic test of the administration of digitalis is satisfactory in any number of instances.

In this age of cardiac and circulatory tire, owing to the recklessness, speed and intensity of the age, some physicians frequently postpone the diagnosis of the cause of a disturbance until after a week of the action of digitalis, and many times the improvement of the condition is so rapid as to be almost phenomenal. This is not to suggest that digitalis be used carelessly or recklessly or without a careful decision as to whether or not the drug is contra-indicated, but is to urge a more careful analysis of disagreeable internal sensations before we term the patient a hysteric, a neurasthenic, a melancholic or a malingerer.

To be specific, if the patient complains of pains in any part of the chest or upper abdomen, or of leg-aches, or of being weary, or exhausted, or of sleeplessness at night, or of pains in the back of his head, we should investigate the cardiac ability, besides ruling out all of the more frequently recognized causes of these disturbances.

If there is more dyspnea than normally should occur in the individual patient after walking rapidly or climbing a hill or going upstairs; if after a period of a little excitement one finds that he cannot breathe quite so deeply, or that something feels tight in his chest, the heart needs resting; if after one has been driving a motor car or even sitting at rest in one which has been going at speed or has come unpleasantly near to hitting something or to being run into, it is noticed that the little period of cardiac disturbance and chest tension is greater than it should be, the heart needs resting.

If the least excitement or exertion increases the cardiac speed abnormally, it means that for many minutes, if not actually hours during the twenty-four, the heart is contracting too rapidly, and this alone means muscle tire and muscle nutrition lost, even if there is no actual defect in the cardiac muscle or in its own blood-supply. If we multiply these extra pulsations or contractions by the number of minutes a day that this extra amount of work is done, it will easily be demonstrable to the physician and the patient what an amount of good a rest, however partial, each twenty-four hours will do to this muscle. Of course anything that tends to increase the activity or the disturbance of the heart should be corrected. Overeating, overdrinking (even water), overuse or perhaps any use of alcohol, tobacco, tea or coffee should all be prevented. In fact, we come right to the discussion of the proper treatment and management of beginning high blood-pressure, of the incipiency of arteriosclerosis, of the prevention of chronic interstitial nephritis, and the prevention of cardiovascular-renal disease.

Besides the instruments of precision above referred to, more careful percussion, more careful auscultation, more careful measurements, *x*-ray pictures and fluoroscopic examinations of the heart, and a study of the circulation with the patient standing, sitting, lying and after exercise, makes the determination of circulatory ability a specialty and the physician who becomes an expert a specialist. It is a specialization needed to-day almost more than in any other line of medical science.

Greene, referring to the work of Henry Head, Sherrington, MacKenzie, and Alexander Lambert's interpretation of their investigations, shows that the heart is a sensitive organ and can cause sensations from disturbances of its various parts much more subtle than the angina pectoris which we recognize. The auricles may refer their disturbances to the axillæ and shoulders; the ventricles may refer their disturbances to the lower parts of the thorax, to the upper abdomen, to the inner surfaces of the upper arm or to the ulnar side of the forearm and wrist; if the aorta is in trouble, pain may be referred up into the neck, or even into the back of the head.

As so much of our science, to-day, is aimed toward prevention, we should by every possible care prevent the heart from becoming weakened; we should, by treating every tonsillitis with the greatest of care and by removing or partially eradicating all tonsils that are diseased, take means to prevent the occurrence of rheumatism and chorea; we should never allow a patient to become active too soon after any serious illness, or even immediately after any slight illness, and certainly should keep a patient at rest for hours after every anesthesia, and in bed for at least two weeks after a severe operation. It is to be regretted that the aim of many surgeons to-day is to have their patients up and about, after an operation, in from a week to ten days. This is an unnecessary cardiac test, even if the operative region excused it. Even after so simple a thing as a migraine, a biliary colic, a renal colic or any other acute pain in which there has been a short starvation period and the administration of active narcotic drugs, with the reflex tire to the circulation from the pain, to say nothing of actual pneumogastric reflexes on the heart, if the patient rises too soon he will invariably feel cardiac exhaustion, and his heart will not recuperate for hours and perhaps days. If this is repeated several times the patient will develop a cardiac muscle weakness.

For the sake of discussing the therapy of cardiac disturbances in a logical sequence, they may be classified as follows:

- Pericarditis
  - Acute
  - Adherent
- Myocarditis
  - Acute
  - Chronic
  - Fatty
- Endocarditis
  - Acute, simple
  - malignant
  - Chronic
- Valvular Lesions
  - Broken compensation
  - Cardiac drugs
  - Diet
  - Resort treatment
- Cardiac disease in children
- Cardiac disease in pregnancy
- Coronary sclerosis
- Angina pectoris
  - Pseudo-angina
- Stokes-Adams disease
- Arterial hypertension
- Cardiovascular-renal disease
- Arhythmia
- Auricular fibrillation
- Bradycardia
- Paroxysmal tachycardia
- Hyperthyroidism
- Toxic disturbances
- Physiologic hypertrophies
- Simple dilatation
- Shock
- Stomach dilatation
- Anesthesia in heart disease

(To be continued)

Clean Up at Home.—In many places outside our own fair land we have met and conquered tremendous sanitary problems. In fact, I have been told by Latin-Americans, "You clean up Manila, Havana, Panama, Colon, and threaten to clean Guayaquil. Why don't you clean your own home towns of their typhoid and malarial death-rates which are a disgrace to civilization?" I cannot answer, but I do say to you that I know that the same energetic application of sanitary laws which, and which alone, made the Panama canal an existent fact instead of an iridescent dream, and was able to do so because of ability in that instance to coerce, will ultimately be able through persuasion and sweet reason to convince our own people that the sanitarian is their best and truest friend, and seeks not to rob them of any portion of their heritage of liberty, and would take away none of their belongings save dirt, disease and death.—White in *Wisconsin Med. Jour.*

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[*For other information see second page following reading matter*]

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THE "PRIMARY LUNG FOCUS" IN TUBERCULOSIS, ESPECIALLY IN CHILDREN

In 1876 Parrot published the results of studies on the relationship between lesions in the lungs, principally of infectious origin, and of the tracheobronchial lymph-nodes. He showed that lesions of the lungs were associated always with lesions of the same nature in the regional lymph-nodes. He found this to be true of tuberculosis also; whenever there was tuberculosis of the tracheobronchial lymph-nodes he found at least one tuberculous spot in the lungs. It is true that frequently this focus in the lungs might be so small that it was not easy to find, but it was hardly ever absent. This observation, which for a long time did not receive sufficient attention, has been confirmed by Küss and others.

According to Küss, tuberculosis in children manifests itself first by a small nodule in the lung, followed by tuberculous foci in the regional lymph-nodes. The size of the focus in the lung is variable; it may be encapsulated with caseous matter in the center; it is situated in the lower lobes oftener than in the upper, and since it is frequently small as compared with the changes in the lymph-nodes, may easily be overlooked or regarded as secondary. Küss never found a focus like this in the lungs of children without tuberculous changes of approximately the same age or younger in the corresponding lymph-nodes. He considered mostly simple forms, however, and believed that the lesions described, which he regarded as the first step in the infection, were caused by the inhalation of a limited number of bacilli. It has been asserted that the same relation holds in adults as well, and that in every case of tuberculosis of the tracheobronchial lymph-nodes there will be found a corresponding pulmonary focus (E. Albrecht).

In a recent study of this relationship Ghon,[1] the pathologic anatomist, who obtained his material from St. Anne's Children's Hospital in Vienna, brings forward some interesting results. From July, 1907, to Dec. 31, 1909, Ghon made 184 autopsies on the bodies of patients who had had tuberculosis, and the organs were examined thoroughly with reference to the distribution of the tuberculous lesions. The cases fall into two groups, one with a typical so-called primary pulmonary focus (170 cases, or 92.4 per cent.) and another without any such focus being discovered (fourteen cases, or 7.6 per cent.). The first group could be divided into several subgroups depending on the presence of other tuberculous changes and their relationships to those in the lung and lymph-nodes. It is not feasible at this time to consider these various groupings; suffice it to say that a rather large subgroup is composed of cases in which a pulmonary focus and foci in the regional lymph-nodes were found to exist uncomplicated with other demonstrable lesions.

In 142 of the 170 cases in the first group, only a single "primary focus" was found in the lungs. This focus may appear progressive; it may show caseation with perhaps softening, or it may be stationary and more or less calcified; sometimes there is simply a scar.

The special significance of this focus lies in its relation to the route of entrance of the bacilli. It clearly cannot be lymphogenic in nature, unless, indeed, it should be due to a retrograde transport of bacilli from the lymph-nodes at the root of the lung. This would be a most singular occurrence when we consider the frequency with which only one focus develops; besides, the focus practically always appears to be older than the areas in the lymph-nodes. At all events, it is never younger. In the second place, it is possible that bacilli might reach the lungs by way of the blood-vessels from primary foci elsewhere. These foci would have to be older than the lung focus. Ghon found that in only 15 per cent. of his cases did any conditions obtain that might be so interpreted. The fact that only one focus of this kind is found in the lungs as a rule certainly appears inconsistent with metastasis by way of the blood-vessels. There now remains to consider the aerogenic route, and from what has been said concerning the other two routes, we see at once that the indications point very strongly to this as the actual path of infection. Practically all who have studied this primary lung focus in relation to secondary nodules in the glands (Küss, E. Albrecht, H. Albrecht, Ghon) agree that this view does not come into conflict with any of the facts at hand. This conclusion that the infection in "the primary lung focus" is aerogenic is based on the assumption that tubercle bacilli, at least as a rule, do not enter the blood-vessels directly or by way of the lymphatics without leaving some lesion at the point of entrance.

The possibility that in advanced tuberculosis several points of dissemination may be concerned cannot be denied; in some cases it would no doubt be impossible on account of the number and character of the changes to make out which route was the principal and primary one as determined by anatomic criteria. In Ghon's series there were, however, only a few cases in which he was able to demonstrate extrapulmonary points of entrance that would fulfil the requirements of primary foci from the anatomic point of view. Approximately 95 per cent. of his cases of which we are speaking appeared to repre-

1. Ghon: Der primäre Lungenherd bei der Tuberkulose der Kinder, Berlin, 1912.

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sent a primary localization of the bacilli; this indicates that in children primary infection of the lungs is the usual mode of tuberculous infection.

While the studies of Ghon and others are purely anatomic in scope, the demonstration that in tuberculosis in children there so commonly exist in the lungs one or more distinct tuberculous foci, which appear to be primary and aerogenic in nature, is of great interest in view of the question concerning the frequency of infection with bovine as compared with human tubercle bacilli in early life. These questions arise, for instance: What is the relation of this presumably aerogenic focus, which it is proper to assume is caused by human bacilli, to the disease in those cases in which bovine bacilli are found? Does it concern mixed and successive infections with bacilli of both human and bovine types? Is it possible that bacilli introduced in the food — and here it would concern bovine bacilli largely, as in Ravenel's experiments — may be absorbed from the intestines and carried to the lungs there to form a primary focus, at least to all appearances? In order to answer these and other questions satisfactorily it will be necessary to make further and even more comprehensive investigations by means of bacteriologic as well as anatomic methods.

A NATURAL OBJECT-LESSON IN HEREDITY

The long-looked-for history of the Kallikak family[1] has at last come from the press of the publishers. Under the auspices of the Training-School for Feeble-Minded at Vineland, N. J., Dr. Henry H. Goddard has investigated and compiled the results of his work in the heredity of this most remarkable family. During Revolutionary days, the first Martin Kallikak (the name is fictitious), descended from a long line of good English ancestry, took advantage of a feeble-minded girl. The result of their indulgence was a feeble-minded son. This son married a normal woman. They in turn produced five feeble-minded and two normal children. Practically all of the descendants of these defectives have been traced as well as those of the two normals.

From both normal and defective descendants of this union came a long line of defective stock. There were 480 in all. Of these thirty-six were illegitimate, thirty-three sexually immoral, twenty-four confirmed alcoholics and three epileptics. Eighty-two died in infancy, three were criminal, eight kept houses of ill fame and 143 were distinctly feeble-minded. Only forty-six were found who were apparently normal. The rest are unknown or doubtful. But the scion of the good family who started this long line of delinquent and defective progeny is also responsible for a strain of an entirely different character. After the Revolutionary War was over, he married a Quaker girl of good ancestry and settled down to live a respectable life after the traditions of his forefathers. From this legal union with a normal woman there have been 496 descendants. All of these except two have been of normal mentality. The exceptions were cases of insanity, presumably inherited through marriage with an outside strain in which there was a constitutional psychopathic tendency. In all the 496 there is not an instance of feeble-mindedness. The offspring descended from this side of the house have universally occupied positions in the upper walks of life. They have never been criminals or ne'er-do-wells. On the other hand, there has not been a single instance of exceptional ability among the descendants of the first Martin Kallikak and the feeble-minded girl. Most of these descendants have failed to rise above the dead level of mediocrity; indeed, most of them have fallen far below even this minimum standard.

The fact that the descendants of both the normal and the feeble-minded mother have been traced and studied in every conceivable environment, and that the respective strains have always been true to type, tends to confirm the belief that heredity has been the determining factor in the formation of their respective characters. In the cities the descendants of the legal marriage with the normal woman are physicians, lawyers and prominent business men, while the descendants of the feeble-minded mother are almost invariably found in the slums. In the rural districts the descendants of the normal mother and her consort are wealthy and influential farmers, while the others never rise above the rank of farm laborers and shiftless men and women who are unable to subsist without the aid of charity. Many representatives of the defective branch are inmates of almshouses while there are no paupers at all among the normal descendants.

In many ways this study of Goddard's far outweighs in importance the famous comparison by Dr. Winship of the Jukes and Edwards families. In that case the simple fact was demonstrated that a good family like that of the illustrious Jonathan Edwards had given rise to innumerable examples of the highest intellectual and moral worth, whereas the criminal Jukes for seven generations contributed nothing to the common good and cost the state of New York large sums of money. But the Jukes family and the Edwards family had no ancestor in common. Their environment was totally different and they lived in entirely separate communities. Although from sociologic and economic points of view the history of the Jukes family and its comparison with that of the family of Jonathan Edwards has great value, it is of but scant scientific importance as compared with that of the Kallikak family, for here a natural object-lesson in eugenics shows unmistakably the manner in which after-coming generations from a given mating receive the characteristics of the dominant strain, which in the elder (illegitimate) Kallikak line was the inferior strain, with only a debased and enfeebled heritage to hand on.

1. Goddard, Henry Herbert: The Kallikak Family, a Study in the Heredity of Feeble-Mindedness, New York, the Macmillan Company, 1912.

FUNCTIONS OF THE SPLEEN

An examination of any text-book of physiology will suffice to indicate how utterly chaotic and uncertain have been the views with respect to the probable functions of the spleen. The chief reason for this state of our knowledge lies in the fact that the obvious fundamental experiment designed to test the uses of such an organ has hitherto completely failed to furnish any decisive evidence regarding the real purpose of the spleen. There are numerous records of its experimental removal in diverse groups of animals as well as its surgical removal in man; but either the observations made after splenectomy are entirely negative in so far as any observable perversions of function are concerned, or the evidence is conflicting. Removal of the spleen is certainly not incompatible with the maintenance of life as is the case in so many other instances of prominent organs which are far less conspicuous in size and apparent importance. There are no detected alterations of metabolism as the consequence of the operation;[1] yet, in spite of all this negative evidence, one cannot help but hesitate to relegate to the pigeon-hole of physiologic obscurity an organ which so evidently obtrudes itself on our consideration whenever the viscera are brought to light.

There are certain facts, however, which have tended to connect the spleen in some way with the formation of the blood elements. First of all is the well-known iron content of this organ which may at times become relatively large. Nevertheless, the evidence for the rôle of the spleen in the construction of new red corpuscles has been anything but convincing. Regeneration of blood-cells has been found, notably by Noël Paton and his associates, to occur even in young, growing individuals quite as readily after splenectomy as it does in the intact animal.

To Prof. Leon Asher and his pupils in Berne is due a series of interesting observations which promise to clear up some of the vexatious uncertainty mentioned.[2] They have demonstrated that the spleen is, indeed, an organ for the metabolism of iron. This important conclusion is based on the observed fact that under the most diverse conditions spleenless animals regularly excrete more iron than their normal companions; this finding has been confirmed by Bayer on splenectomized men. In the light of this fact it is possible to understand some of the older supposed discrepancies in the literature on the relation of the spleen to hematopoiesis. It is now quite conceivable that, if a spleenless individual is receiving a minimum of iron in the dietary, the continued loss of the element under the induced conditions of exaggerated iron elimination may lead to a real deficit when an extensive production of the ferruginous red blood-corpuscles becomes necessary, and the supply of iron for the manufacture of hemoglobin may actually here become scanty. When iron is ingested in abundance, however, the storage capacity of the liver and other organs may readily suffice for any regenerative emergency even under the unfavorable conditions of exaggerated loss which pertain in splenectomy.

This is, indeed, what has been found to occur. If healthy young dogs are maintained for even considerable periods on an iron-free diet, they do not suffer any anemia unless the spleen has been removed, whereupon a marked diminution in the content of hemoglobin and the number of red blood-corpuscles promptly ensues. This deficiency is at once made to disappear if meat — a food abounding in iron — is furnished in the diet. The reparative response to hemorrhages follows along similar lines after splenectomy, the blood-picture being determined essentially by the abundance or lack of iron in the food. As long as food which contains iron is given freely, the removal of the spleen is without apparent consequence even for the growth and development of the young. The conflicting evidence in regard to the blood-forming functions of the spleen may thus find their explanation in dietary factors. In any event the removal of the spleen, which is now a familiar surgical procedure, calls for an abundance of iron in the food as an obvious consequence of Asher's important investigations.

1. Compare Mendel, Lafayette B., and Gibson, R. B.: Observations on Nitrogenous Metabolism in Man After Removal of the Spleen, Am. Jour. Physiol., 1907, xviii, 201.

2. Compare Asher, L., and Grossenbacher, H.: Beiträge zur Physiologie der Drüsen, Biochem. Ztschr., 1909, xvii, 78. Asher, L., and Zimmermann, R.: Ibid., xvii, 97. Asher, L., and Vogel, H.: Ibid., 1912, xliii, 386. Also Bayer, R.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., xxi, 338; xxii, 111 and 532.

OXYGEN INHALATION AND OXYGEN PNEUMONIA

In the early days after the isolation of oxygen it was noted at various times that the breathing of the gas sometimes gave rise to inflammatory conditions in the lungs. Until quite recently most of the experiments on oxygen respiration were conducted with high-pressure atmospheres. This is essentially true of the classic work of Paul Bert, in whose trials the animals succumbed to the nervous effects after brief exposures to high oxygen pressures before the lungs became pneumonic. Neither Bert nor his immediate successors appear to have considered the possible effects of lower concentrations of oxygen acting for longer periods.

Since the use of oxygen has become popular in a variety of ways, the possible pathologic effects which its use may induce have attained an obvious importance. The gas is respired not only in the treatment of disease but also in caisson work and rescue work, in which it may be breathed for long intervals. There are similar uses of the gas for respiration in confined spaces or vitiated atmospheres. Adams[1] has investigated the alleged effects experimentally on animals under conditions which permitted of a rigorous control of all the conditions and a careful pathologic investigation of the subjects. He concluded that oxygen in any percentage

1. Adams, Alfred: The Effects of Atmospheres Enriched with Oxygen on Living Organisms, Biochem. Jour., 1912, vi, 307.

at atmospheric pressure can be inhaled for short periods without ill effects. At percentages below 70 it can be inhaled for prolonged periods without giving rise to any symptoms or pathologic sign; but when the content rises above this, the use of oxygen is attended with serious risk of causing an irritative pneumonia, and, if persisted in, produces death. The pneumonia is of a lobal and catarrhal character. The lungs have been observed to fill with exudate in as short a period as five hours. This rather remarkable and interesting fact suggests that the exudate may be a kind of pathologic secretion by the lung epithelium, rather than an irritative exudation attributable to the injury of the latter. In any event that these effects are caused by the oxygen and not by incidental microorganisms is shown by the bacteriologic findings, which were essentially negative.

Others also have, of late, called attention to the dangers attending the careless use of oxygen for respiration under circumstances enforced by the exigencies of accident or the industries. When the higher pressures usually employed and often made necessary by the environmental conditions were imitated with the substitution of air in place of pure oxygen, the pulmonary derangements were not developed.[2] This fact is significant; for it places the responsibility for the pathologic outcome on the concentrated oxygen itself rather than on the undue atmospheric pressure at which it was administered. Since oxygen is used liberally in certain recent modes of inducing narcosis, a warning has been uttered against the harmful influence which may inadvertently result if the limits of safety are not clearly recognized and respected.[3]

It has been known for some time[4] that certain microorganisms, notably the *Bacillus tuberculosis* and *B. pestis*, are very sensitive to oxygen, their growth being markedly arrested by this gas. An atmosphere enriched with oxygen does not destroy them as it does the organisms of actinomycosis and mycetoma, although it exercises a decided inhibitory function. Acting on this clue Adams has attempted to ascertain whether the retarding effect of increased oxygen percentage on the growth of the tubercle bacillus *in vitro* cannot be extended to treatment *in vivo*. The outcome was entirely negative. We must conclude that the beneficial effects of fresh air and ventilation on strumous diseases are due, not to the small increase of oxygen over that of the interiors of dwellings or to any chemical condition of the air, but rather to some physical stimulus. Precisely such information is imperatively demanded before what may be called environmental therapy can be put on an intelligent basis and made to render its best service in the prevention and treatment of disease.

2. Bornstein, A., and Stroink: Ueber Sauerstoffvergiftung, Deutsch. med. Wchnschr., Aug. 8, 1912, p. 1495; see abstract 114, THE JOURNAL A. M. A., Sept. 28, 1912, p. 1227.

3. Schmidt, Adolf, and David, O.: Zur Frage der Sauerstoffvergiftung, Deutsch. med. Wchnschr., Sept. 5, 1912, p. 1697, where further references to the literature will be found.

4. Compare Moore and Williams: Biochem. Jour., 1909, iv, 177; 1910, v, 181.

REPORT OF THE ILLINOIS PELLAGRA COMMISSION

The recognition of pellagra in the public institutions of Illinois in 1909 and the discovery of a considerable number of cases led to the creation of a commission to study the disease in that state. The report has recently been published in the *Archives of Internal Medicine*.[1] It is interesting chiefly on account of its negative findings, although some suggestions are offered in a general and tentative way with regard to lines along which the disease should be studied further in an effort to determine its exact etiology. The commission endeavored to study the disease with the object of either confirming or refuting the various theories that have been advanced as to its etiology and at the same time ascertain any other facts that might lead to independent conclusions concerning its origin. The maize theory in its various aspects was taken up and carefully worked over and the conclusion was reached that the burden of proof rests with the advocates of this theory. A clinical experiment was conducted for a period of a year with a number of inmates of Illinois institutions on a diet containing a large proportion of corn and with a like number of inmates under similar conditions on a corn-free diet. At the end of that period a larger number of cases of pellagra had developed among patients on the corn-free diet.

The findings in regard to the maize theory may be stated as follows: Excessive feeding of maize was not accompanied by more pellagra than was observed in individuals kept on a strictly maize-free diet, other conditions being as far as possible identical in regard to age, sex, mental and bodily condition, habits and occupation and general surroundings, although cases developed under both conditions. Cutaneous tests on pellagrins with extracts of corn gave rise to no anaphylactic symptoms. Animal experiments carried on with both good and damaged maize gave entirely negative results. Injection of extracts of maize contaminated with five different molds was found to be toxic in one instance. The blood of pellagra patients was found to be negative with regard to leukocytosis, and the complement-fixation tests were negative. The cerebrospinal fluid showed no increase of cell elements or albumin content and cultures were uniformly sterile. The urine showed increased amounts of indican and there were variations in color, quantity, specific gravity and composition. Anaphylactic tests by von Pirquet's method with corn extracts were uniformly negative.

Sambon's theory of the transmission of pellagra by the sand-fly was carefully studied by Professor Forbes, state entomologist, with a complete absence of results which would in any way confirm the *Simulium* theory of the etiology. A number of species of *Simulium* are found in Illinois, but not *S. reptans*, the species to which Sambon attributes the transmission of pellagra. Investigations carried out with the object of demonstrating a

1. Arch. Int. Med., August and September, 1912, pp. 123, 219.

blood parasite were also negative, though it is stated that such a parasite may live and propagate in the blood, but may require special methods for its demonstration. The failure to produce pellagra in animals with infected blood does not exclude the possibility of such a cause.

Among the more or less positive findings which the commission feels are suggestive are the disturbed relationships of the normal forms of the intestinal bacteria, the appearance of several new forms of bacteria in appreciable numbers and the frequency with which amebas and flagellates are found. Some forms of bacteria not ordinarily found in the feces of healthy men were found in these patients in appreciable numbers and it is believed that these bacterial and protozoal forms play some part in producing the pathologic changes observed. These consisted in ulcerative lesions in the intestines and a peculiar form of fatty degeneration in the liver lobules. The latter condition and the findings in the nervous system really suggested a toxemia. The more favorable condition with reference to the incidence of pellagra in individuals on a more generous protein diet was also suggestive of the idea that this may have some predisposing relation to the disease. The report, therefore, states as the more or less positive conclusions of the commission that pellagra is a disease due to infection with some living microorganism, and that a possible habitat for this parasite in man is the intestinal canal. No specific organism, however, has been found or suggested. The report is highly interesting and comprehensive and will be of great value in the further study of the etiology of this disease.

THE NOBEL PRIZE IN MEDICINE FOR 1912—ALEXIS CARREL

The Nobel prizes were founded by Alfred Nobel, a Swedish engineer and inventor of high explosives. He directed that the income of a large sum of money should be divided each year into five prizes—in physics, chemistry, physiology or medicine, literature, and in work toward the establishment of peace. His purpose was "to compensate those who in the previous year have been most useful to humanity," regardless of their nationality. It is said that the value of each prize is $39,000. The prizes have been awarded annually since 1901, when Behring received the prize in medicine for his discovery of diphtheria antitoxin. Among the recipients of this prize are Pawlow, Koch, Laveran, Finsen, Ehrlich, Metchnikoff and Kocher. It has not been found practicable to follow to the letter the direction of the founder to give the prizes for the most remarkable achievements of the preceding year, this direction being interpreted to mean recent achievements. Previous to this year two Americans have received prizes, A. A. Michelson of the University of Chicago in physics, and Theodore Roosevelt for his efforts to establish peace between Japan and Russia.

This year for the first time the prize in medicine comes to this country. Alexis Carrel, who brings this honor to American medicine, was born in France in 1873 and graduated as doctor of medicine from the University of Lyons in 1900. Shortly afterward he came to this country and worked for a year or two in the physiologic laboratory of the University of Chicago, where he accomplished remarkable results in the suture of blood-vessels, and began his work on the transplantation of organs. Soon after the opening of the Rockefeller Institute for Medical Research in New York he joined its staff, and it is there that he has done the work for which he now receives the Nobel prize. This work has attracted wide notice. The results he has obtained in experimental surgery, more particularly in the surgery of blood-vessels and in the transplantation of organs and of limbs, are nothing less than sensational; they show a marvelous technical skill, perseverance and scientific ingenuity at the same time as they indicate possibilities of surgery heretofore undreamed of. His recent exploits in the work originated and developed by Professor Harrison, the cultivation of cells and tissues outside of the body, to say the least, richly promises new knowledge of biologic and physiologic processes.

The American medical profession extends congratulations to Dr. Alexis Carrel for the great honor he has received, and for his brilliant experimental achievements, which contribute to the advancement of practical medicine and surgery, and thus to human welfare.

Current Comment

MORE FACTS REGARDING PROTEIN METABOLISM

We recently directed attention[1] to the conflicting views held in the past on the immediate fate of the products of protein digestion as they leave the alimentary tract toward the blood-stream of the portal circulation. The evidence furnished by Folin and Denis, indicating that the amino-acids, which represent the real culmination of the digestive processes in the intestine, actually enter the blood and are carried as such to the tissues of the body before a final assimilation or destructive change is achieved, was reviewed. We remarked at that time that the accuracy of the deductions made by the Harvard investigators hinges on the validity of the newer analytic methods which they employed. It is gratifying to find that corroboratory evidence is now forthcoming from another American laboratory[2] in favor of the view that the amino-acids as such do normally traverse the intestinal wall and enter directly into the blood-stream. Van Slyke and Meyer of the Rockefeller Institute, employing an independent method, have actually demonstrated the presence of amino-acids in the blood. The blood of the dog, for example, normally contains amino-acid nitrogen, amounting, in animals

1. A New Theory of Protein Metabolism, editorial, THE JOURNAL A. M. A., Sept. 14, 1912, p. 880.

2. Van Slyke, D. D., and Meyer, G. M.: The Amino-Acid Nitrogen of the Blood; Preliminary Experiments on Protein Assimilation, Jour. Biol. Chem., 1912, xiii, 399.

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which have fasted a day, to from 3 to 5 mg. per 100 c.c. of blood. When amino-acids are injected directly into the circulation and are thus made to avoid the intestinal barrier, they are rapidly removed from the circulation. The fact that the amount normally present in the blood is small, as already indicated, is presumably attributable to the rapidity with which the tissues take up the amino-acids as soon as these digestion fragments become unusually abundant in the circulating medium. The New York investigators further noted that the amino-acid content decreases little during the passage of the blood from the mesenteric vein out to the femoral artery, thus indicating that the amino-acids are not held back or destroyed by the liver before reaching the other tissues. On the contrary, they appear to traverse the entire organism and find no difficulty in reaching the body cells in general. With the growing evidence of the immediate significance of the amino-acids thus accumulating, our point of view in metabolism must experience a change. The intestinal wall may now be relieved of the chief responsibility for the immediate care of the protein fragments; the liver can no longer be charged with the functions of deamination or storage for nitrogenous end-products or newly made protein. But the real seat of the so-called assimilative functions still remains to be discovered, even if the scenes of previous tentative hypotheses have been shifted.

BLOOD-SERUM IN HEMOPHILIA

The use of human or other blood-serums in cases of hemophilia or persistent hemorrhage is proving to be a measure of value. In this issue four cases are reported by different authors in which human or animal serum was used for various conditions of hemorrhage, the measure apparently being successful in three. The variety of conditions present makes these reports especially interesting. The case of Barringer was one of unilateral kidney hemorrhage which was controlled by the injection of human blood-serum supplied by the brothers of the patient. The case of Reichard was one of spontaneous hemorrhage of the new-born. In this instance normal horse-serum was used. Claybrook's case was one of hemophilia in an infant 15 months old, who had also bled persistently from a circumcision wound, ten days after birth. In this instance the kind of serum is stated as a "normal serum;" probably horse-serum was used. This child died. The serum was used late after other measures had failed and when such a profound anemia had been produced as perhaps to preclude recovery. The fourth case was one of hemophilia in a boy aged 16. In this instance, as no other serum was at hand or easily obtainable, diphtheritic serum was used, in combination, of course, with other measures; the result was successfu'. Another case illustrating the variety of conditions in which blood-serum may be used was one reported by C. Koch and W. Klein,[1] the case of a girl of 16 whose second and third menstruations suggested a hemophilic tendency. The menstrual hemorrhage had kept up for almost three weeks, with spontaneous hemorrhage from the gums and nose. Ordinary measures having failed, the defibrinated blood from a normal parturient was injected and there was no further hemorrhage. The hemoglobin, which had dropped to 20 per cent. during the hemorrhage, by the twentieth day had risen to 55 per cent., and the following menstruation was normal. The blood-findings in this case, a small leukocyte count with unusually high lymphocyte count, suggested the hereditary form of hemophilia. The blood was capable of only slow coagulation. It is suggested by Koch and Klein that the physiologic leukocytosis in the parturient woman may have contributed to the successful outcome in this case. In the case reported by Claybrook, the hemorrhage was from a small wound on the tongue. The blood clotted firmly but the hemorrhage did not stop. Claybrook suggests that the usually accepted conception of this condition may be wrong; that the trouble is not with the blood itself but may be due to a condition in the intima of the vessels. He believes that the intima of the vessels in a normal individual when injured, secretes or throws out a material that agglutinates and seals up the broken ends of the vessel and thus stops the hemorrhage. In the hemophiliac this property or function of the cells of the intima may be lacking, resulting in a continuance of the hemorrhage. This theory is deficient in that it does not explain the effect of the injected serum in stopping the hemorrhage. The procedure seems to be of value in a considerable variety of cases which often prove intractable to other measures.

1. Koch, C., and Klein, W.: Gynäk. Rundschau, 1912, vi, 597.

A SCHOOL FOR THE STUDY OF THE PREVENTION OF ACCIDENTS

Illinois is well in the forefront of states which have passed good laws for the health, safety and comfort of employees and for the prevention of occupational diseases. While the old method of fines is provided for in these statutes, the officials have determined to act on the principle that it is better to lead than to drive; accordingly a school has been established in Chicago for the education of both employees and employers in the principles and methods of the prevention of occupational diseases and accidents. The school is in charge of the state factory inspector, whose duty it is under the law to see that health and safety devices are adopted. Beside a technologic laboratory for the study of the causes of industrial accidents and diseases, there is a chemical laboratory, a model rest-room, a model emergency hospital, a museum of pictures and exhibits showing safety devices and a drafting-room for the preparation of plans and specifications for machinery guards; these plans and specifications will be furnished free to manufacturers. There is also a free reference library of 4,000 volumes on factory inspection, occupational diseases and welfare work. The facilities and equipment of the school are to be supplemented by lectures to foremen, superintendents and staff physicians of industrial plants and to social workers and others regarding occupational diseases and hazardous machinery. On the teaching-staff of the school is a physician who has made a special study of occupational diseases in this country and abroad, an engineer who is an expert in the guarding of hazardous machinery, and a corps of inspectors who are specializing in the problems involved in their work.

Working men and women are also to be encouraged to visit the school and receive instructions in the way to protect themselves or to have examinations made in case they believe they are suffering from diseases due to their occupation, in which case conditions responsible for their troubles will be inquired into and corrected. The bulletins of the department of state factory inspection will be issued from this school and distributed to manufacturers, workers and others. Under this plan the state factory inspector, instead of acting in the rôle of policeman to compel compliance with the laws, will act as an expert in an advisory capacity. With manufacturers and laborers working in cooperation it is expected that Illinois will soon occupy a leading position in the condition of those employed in its industrial plants.

ANTIKAMNIA IN AMERICA AND GREAT BRITAIN

The following letter from the Antikamnia Chemical Company to THE JOURNAL was received about August 1:

"You have at various times represented in your JOURNAL that the Antikamnia sold in foreign countries, particularly in Great Britain, has a different formula from the Antikamnia sold in the United States, and you have also published alleged formulas of each to show wherein they are supposed to differ.

"We hereby respectfully notify you that the Antikamnia formula is the same for all countries, and the publication of any statements to the effect that the formula of Antikamnia is different in Great Britain, or any other foreign country, from that sold in the United States is a libel, and will be prosecuted as such."

On the receipt of this a letter was written to a correspondent in London requesting him to purchase in the open market a package of Antikamnia. This was done and the original sealed package reached the Association's laboratory a few days ago. Careful analysis of this specimen shows it to contain acetanilid but no acetphenetidin, while the Antikamnia sold in the United States contains acetphenetidin but no acetanilid. The company's protest to the contrary notwithstanding, the formula of some Antikamnia, at least, *is* still different in Great Britain from that sold in the United States. It is possible, of course, that some time in the future the composition of every package of this nostrum on sale in the United Kingdom will be similar to that of every package sold in the United States. It is even possible that "Antikamnia & Quinin" tablets will — or do — actually consist of quinin and the mixture called Antikamnia — although, as THE JOURNAL has shown, this has not been the case in the past. Since the patent expired on acetphenetidin, this drug has become so cheap — it can be bought at wholesale for less than 6 cents an ounce — that, commercially, it must make very little difference whether acetanilid or acetphenetidin is used in the manufacture of Antikamnia. But the question arises: Have our British confrères been notified of the change in formula? A careful study of the Antikamnia advertisements in English medical journals shows that the British medical profession has been given no more consideration by this concern than was the American medical profession when the change in composition was made on this side. But then why should it be? Physicians, British or American, who are addicted to the prescribing of secret proprietaries such as Antikamnia have little need of formulas —"Theirs not to reason why!" The medical profession on both sides of the Atlantic has never known the exact composition of Antikamnia and does not know it now. Physicians who call for preparations of the Antikamnia type are prescribing names, not drugs.

LIMITING ENROLMENTS IN MEDICAL SCHOOLS

The number of students who can be given a thorough training in a medical school necessarily depends on the qualifications of the students admitted, on the number and the ability of the teachers and on the laboratory equipment and clinical facilities possessed by that school. Yet we still have medical schools in this country which do not appreciate the necessity of limiting their enrolments to numbers that can be cared for properly. That some schools are not yet past the mercenary stage in the development of medical education is apparent from the fact that, even after their classes are crowded far beyond the utmost capacity of their laboratories and out of all proportion to their facilities, they nevertheless continue to allure still greater numbers — and incidentally receive larger incomes from fees — by the use of glowing, self-applauding or even misleading advertisements. Some schools, in fact, have adopted very ingenious methods whereby the largest possible numbers of students can be ground through with the minimum number of teachers and the least amount of trouble and expense. In fact, so long have such methods been the rule that the action taken recently by Johns Hopkins Medical School[1] in limiting its enrolment of medical students, and thereby recognizing the college's responsibility to the individual student, comes as an agreeable surprise. It is not so surprising, however, that the school which took this action was one of our highest-endowed and best-equipped medical schools and one of those having the best-prepared students and the largest corps of able teachers. If, therefore, this college considers that about ninety students are all that should be taken in a class, how much more important it is to have smaller classes of lower-grade students in schools having fewer teachers and less equipment! May the day speedily come when all our medical colleges may look less to "large" classes — and to correspondingly large incomes from fees received — and more to the thoroughness of the training furnished and the ability of the product turned out! Fortunately, this country has a rapidly increasing number of high-grade, thoroughly equipped medical schools which still have room for the well-trained students who are thus unavoidably turned away because one school has reached the limit of its enrolment.

1. See Medical News, under the head of Maryland, this issue.

Failure of Tuberculin Treatment in Surgical Tuberculosis.—Extensive experimental research and clinical experiences reported by A. M. Arquellada explain the failure of tuberculin treatment in surgical tuberculosis by the fact that these lesions are always the seat of mixed infection. The tuberculin is inclined to aggravate them, evidently by a tendency to anaphylaxis. His report on the subject was the leading address at the recent Spanish congress on tuberculosis. The report is published in the *Siglo Medico*, 1912, lix, 610.

Medical News

ILLINOIS

New Hospital for North Shore.—James A. Patten has offered $75,000 for a contagious disease hospital for Evanston and adjoining north shore towns provided that the towns will raise $100,000 as an endowment fund. A meeting was held in Evanston, October 17, and $20,000 has been subscribed. Physicians and citizens of Wilmette held a meeting and started a canvass. It is the plan to have this hospital building on a site immediately north of the present Evanston Hospital.

Red Cross Seal Endorsed by Druggists.—The Illinois State Association for the Prevention of Tuberculosis announces that the Chicago Retail Druggists Organization at its third quarterly meeting October 8 endorsed the Red Cross seal thereby showing cooperation of the druggists in the sale of the seal. The association suggests that physicians should place the Red Cross seal on the prescription blank, which will not only attach an appropriate emblem but will assist with reviewed cooperation in the antituberculosis campaign.

Chicago

Personal.—Drs. Edmund J. Doering, Dr. and Mrs. Glenn M. Hammon and Dr. and Mrs. G. Paull Marquis have returned from Europe.

Ball for Tuberculosis Funds.—The annual ball of the Jewish Relief Society will be given Sunday evening, October 27, at the First Regiment Armory, Sixteenth Street and Michigan Avenue.

INDIANA

State Society Meeting.—At the annual meeting of the Indiana State Medical Association held in Indianapolis, September 28-29, the following officers were elected: president, Dr. A. C. Kimberlin, Indianapolis; vice-presidents, Dr. J. Guy Hoover, Boonville; U. G. Poland, Muncie, and J. P. Ward, Vevay; secretary, Dr. C. N. Combs, Terre Haute (reelected); treasurer, Dr. D. W. Stevenson, Richmond, and delegates to the American Medical Association, Drs. Frank B. Wynn, Indianapolis, and C. S. Bond, Richmond. The 1913 meeting will be held in West Baden. The association, by resolution, declined to approve any plan of solving the vice problem, stating its belief that neither segregation nor licensing has satisfactorily solved the question and favoring the quarantining of persons with venereal disease.

KENTUCKY

New Clinic Opened.—The members of the Kenton County Antituberculosis League opened a clinic on Madison Avenue, Covington, September 21.

Child Welfare Exhibit for Louisville.—A child welfare exhibit will open at the Armory November 21, closing November 27. Model school rooms and play grounds will be shown and a daily clinic for infants will be held in the health section.

Personal.—Dr. Frank E. Corrigan, Louisville, who has been critically ill, is reported convalescent.——Dr. M. M. Moss, Franklin, was caught in a folding bed, October 10, fractured four of his ribs and sustained severe contusions.——The offices of Drs. C. G. Schott and Samuel L. Cochran, Louisville, were injured by fire to the amount of several hundred dollars, October 1.——Dr. Isaac T. Houck, Louisville, sustained serious injuries when his automobile was struck by an interurban car, September 24.——Dr. W. G. Dailey, Millersburg, is reported seriously ill with thrombophlebitis.

MARYLAND

State Society Meeting.—The date of the semi-annual meeting of the Medical and Chirurgical Faculty of Maryland has been fixed for October 12-13. It will be held at Cambridge on the Eastern Shore and Dr. William A. Fisher, Jr., is chairman of the committee on arrangements.

Johns Hopkins Limits Enrolment.—The dean of Johns Hopkins Medical School announces that it has become necessary to limit the number of students owing to the limited space and facilities in the various laboratories. The present enrolment is 355, the largest in the history of the school, and fifty other students were refused admittance prior to the beginning of the session.

Jarrett's Portrait Unveiled.—The portrait of Dr. James H. Jarrett, Towson, which has been painted by Miss Keller at the request of the Baltimore County Medical Association, was unveiled at the meeting of the association October 16, and was presented to the Medical and Chirurgical Faculty of Maryland for permanent hanging in its building, October 18. Dr. Jarrett has been in practice for sixty-one years.

Baltimore

Foreign Visitors in Baltimore.—Sir William Ramsay, Bart., of London, the discoverer of argon and helium, was the guest for four days of President Remsen and Johns Hopkins University. The university conferred on him the honorary degree of LL.D., October 18.——Drs. Ernst Tengwall, Fritz Bauer and E. S. Stallor of Sweden and Drs. P. A. Fenger and Karnberg of Copenhagen, Denmark, are visiting in Baltimore.——Dr. Axel Halst of the University of Christiania, Norway, visited Baltimore, October 16.

Personal.—Drs. Paul Wegefarth, Lewis Weed and Charles Bagley, Jr., have gone to Boston where they will be associated with Dr. Harvey Cushing in his work at the Peter Bent Brigham Hospital.——Dr. James D. Iglehart has been elected vice-president general of the Society of the War of 1812.——Dr. Thomas S. Cullen has been elected president and W. L. Moss, secretary of the Johns Hopkins Hospital Medical Society.——Dr. Fanny E. Hoopes sailed on a tour around the world October 18.——Dr. Joseph E. Giehner, who recently suffered a painful injury on a motorboat, necessitating the amputation of a toe, has recovered and resumed practice.

MASSACHUSETTS

Foreign Physicians in Boston.—The *Bostoner Deutsche Gesellschaft* tendered a reception and dance, October 9, to the German Central Committee for Physicians' Study Travel. The visitors inspected the hospitals and medical schools.

New Hospital Buildings.—The home for nurses of the Quincy City Hospital was formally dedicated October 10. The building has been erected at a cost of $30,000.——The Chicopee Common Council has passed an ordinance appropriating $19,200 for the new tuberculosis hospital at Aldenville.

Personal.—Dr. P. H. McCarthy, Chelsea, fractured his wrist while cranking his automobile, recently.——Dr. John M. Connolly, Boston, has been appointed professor of medicine in the medical school of the University of Oregon and started for Portland, October 7.——Dr. Francis W. Anthony, Haverhill, has been appointed associate medical examiner of Essex County.——Dr. W. P. Lucas has been placed in charge of the Boston Dispensary, which has recently been taken over by the Harvard Medical School.

MICHIGAN

Personal.—Dr. A. F. Fisher, Hubbell, assumed charge, October 1, as physician at the Quincy Mines.——Dr. Rudolph Opperman, Detroit, was thrown from an automobile in a collision with a trolley car, September 20, and seriously cut and bruised.——Dr. W. D. Wilson, Mount Clemens, was seriously injured by being thrown from his buggy.——Dr. H. V. Sutton, Benton Harbor, who has been seriously ill in Mercy Hospital, is reported to be convalescent.——Dr. Louis Barth, Grand Rapids, has returned from Europe.——Dr. R. B. Harkness and family, Houghton, have sailed for Europe.——Dr. J. W. Clark, of the Calumet and Hecla, Calumet, has resigned and will practice in Chicago.

MINNESOTA

Tag Day in St. Paul.—The Antituberculosis Committee of St. Paul reports a collection of about $12,000 from tag day, October 8.

Swedish Surgeons in Minneapolis.—Drs. Fritz Bauer, Malmo, Stellan Holmgun, Norrkoping, and Ernst Tengwall, Vexlo, Sweden, were guests of Dr. C. J. Ringnell at Odin Club, October 13.

Hektoen Addresses Society.—At the meeting of the Minnesota Pathologic Society at the university, October 15, the annual address was delivered by Dr. Ludvig Hektoen on "Recent Observation of Streptococci and the Streptococcal Infection."

Personal.—Dr. R. M. Phelps, Rochester, assumed charge of the St. Peter's Hospital for the Insane, October 8. Dr. H. A. Tomlinson, for twenty years head of this institution and who has gone to Willmar to become superintendent of the State Inebriate Hospital, was given a complimentary banquet by the citizens of St. Peter, October 7.——Dr. F. A. Dunsmoor, Minneapolis, was given a loving cup by physicians of the city at a dinner given in his honor, September 20.——Dr. Clyde Barney, Rochester, has been appointed superintendent of the department of children's diseases in a hospital in Syracuse, N. Y.

NEW JERSEY

New Hospital.—The Presbyterian Hospital, Newark, will be ready to receive patients this month. The association has purchased seven lots on South Ninth Street and has remodeled a large dwelling house on the site. The building now contains seventeen rooms and will accommodate about thirty-six patients. The expense thus far has been about $25,000 and the $5,000 that is still needed for equipment remains to be subscribed.

Tuberculosis Notes.—The Tuberculosis Day Camp, established by the Newark Antituberculosis Association, has been abandoned, the erection of the Essex County Hospital for advanced cases of tuberculosis, the enlargement of Glen Gardner, the shore camp of the association and the aid given by the Board of Education in the treatment of tuberculous school children having made it unnecessary to reopen the camp.—— The formal opening of the Hoboken Tuberculosis Clinic and the office of the Hudson County Tuberculosis Hospital and Sanatorium took place September 21.

NEW MEXICO

New Officers.—New Mexico State Antituberculosis Society at Roswell: president, Dr. A. G. Shortle, Albuquerque; secretary, Dr. LeRoy Peters, Silver City.——Third Councilor District Medical Society at Albuquerque, October 5: president, Dr. C. G. Duncan, Socorro; secretary, Dr. H. B. Kauffman, Albuquerque.

State Society Meeting.—At the annual meeting of the New Mexico Medical Society held in Roswell, September 12-14, the following officers were elected: president, Dr. L. S. Peters, Silver City; vice-presidents, Drs. H. B. Kauffman, Albuquerque; W. T. Joyner, Roswell, and H. W. Goelitz, East Las Cruces; secretary, Dr. R. E. McBride, Las Cruces (reelected); treasurer, Dr. H. A. Ingalls, Roswell.

NEW YORK

Hospital News.—The people of Jamaica begin a twelve-day campaign on November 7 to raise an endowment fund of $50,000 for the Jamaica Hospital.——At the annual meeting of the corporation of the Frederick Ferris Thompson Memorial Hospital, Canandaigua, October 14, Drs. Franklin P. Warner, Canandaigua, and Alfred M. Mead, Victoria, were elected directors, and Dr. John H. Pratt, Manchester, vice-president.

New Officers.—Fourth District Branch of the Medical Society of the State of New York at Glens Falls, October 8: president, Dr. Silas J. Banker, Fort Edward; secretary, Dr. Frederick J. Ressegnie, Saratoga Springs.——Wyoming County Medical Association at Warsaw: president, Dr. G. H. Peddle, Perry; secretary-treasurer, Dr. L. H. Humphrey, Silver Springs.——Seventh District Branch of the Medical Society of the State of New York at Corning, October 10: president, Dr. William T. Shanahan, Sonyea; secretary, Dr. John F. Myers, Sodus.

New York City

Street-Car Line Assists in Tuberculosis Work.—On the back of the transfers used by the Third Avenue Railroad Company, there appears the following legend: "You can learn how to prevent tuberculosis. Learn some cardinal facts about this disease. It causes 10,000 deaths every year in New York City alone. You can obtain literature free of charge, telling you what you can do to prevent it. Drop a post card to the Committee on the Prevention of Tuberculosis."

Berlin Therapeutist in New York.—Dr. L. Briger, professor of therapeutics and special pathology in the University of Berlin, lectured to the students of the hydrotherapeutic department of the Vanderbilt Clinic of the College of Physicians and Surgeons, October 9, demonstrating his method of hydrotherapy in sciatica. It consists of active and passive movements designed to put the nerve on the stretch together with a form of therapeutic pressure on the painful spot, first gentle, then increased until pain is no longer produced. After the painful parts have been subjected, he uses hot steam douches of ten minutes' duration. These movements may be made while the patient is submerged in water at a temperature of 90 degrees, the temperature being reduced at each treatment.

PENNSYLVANIA

Typhoid at Troy.—Troy, with a population of 1,500, had a record up to noon of October 19, of 140 cases of typhoid fever. Every resident of the village is being inoculated in the hope of checking the disease. Dr. Samuel G. Dixon, State Health Commissioner, has sent several trained nurses to Troy to establish an emergency hospital and Dr. C. J. Hunt, assistant medical inspector, and F. Herbert Snow, sanitary engineer of the State Health Department, is investigating the source of the epidemic.

Jefferson Alumni Association Branch Formed.—On October 15, all-day clinics were given by professors of Jefferson Medical College in the Altoona Hospital and in the evening graduates of the institution from the eight central counties, convened in Altoona and formed the Central Pennsylvania Branch of the Jefferson Alumni Association, electing the following officers: president, Dr. J. E. Smith, Altoona; vice-presidents, Drs. H. J. Sommer, Hollidaysburg, superintendent of the Blair County Hospital; H. F. Tomb, Johnstown; George W. Simpson, Mill Creek, and Dr. C. B. Kirk, Everett; secretary, Dr. Charles F. McBurney, Altoona; and treasurer, Dr. J. P. Getter, Belleville. After the business meeting a banquet was given to the visiting Jefferson professors and members of the college teaching staff at which 75 were present. Dr. Samuel C. Smith, Hollidaysburg, was toastmaster and speeches were made by Drs. S. MacCuen Smith, E. E. Montgomery, Hobart A. Hare, Randle C. Rosenberger, G. E. Price, P. Brooke Bland and Henry K. Gaskill, Philadelphia, and Henry J. Sommer, Hollidaysburg.

Philadelphia

Sanitation in Germany.—Dr. A. Weber, Geheimer Regierungsarzt, delivered an address before the Philadelphia Pathological Society, October 24, on "The Organization of the Health Department and of General Sanitary Conditions in the German Empire."

Plan Tuberculosis Hospital.—The Pennsylvania Society for the Prevention of Tuberculosis several days ago wrote an open letter to Dr. Joseph S. Neff, director of public health and charities, urging him to apply his department's portion ($250,000) of the proposed loan to the building of a hospital for the care of consumptive patients. Dr. Neff replied that his department had long recognized the need for a municipal hospital for the treatment and care of consumptives and that if the loan was authorized by the people at the next election, and if the department received its share, it was his intention to start immediately on the erection of a special hospital for tuberculosis.

VERMONT

State Board Adopts Higher Requirement.—Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, writes that the board unanimously adopted a resolution that after July 1, 1916, no applicant shall be admitted to examination for license to practice unless he has completed a year's work in a college of liberal arts in the study of physics, chemistry and biology. This is the eleventh state which has adopted this higher requirement of preliminary education.

State Society Meeting.—At the annual meeting of the Vermont State Medical Society in Montpelier, October 10-11, the following officers were elected: president, Dr. B. H. Stone, Burlington; vice-president, Dr. W. W. Townsend, Rutland; secretary, Dr. C. H. Beecher, Burlington; auditor, Dr. C. H. Cramton, St. Johnsbury; delegates to the Connecticut Valley Society, Dr. F. C. Angell, Randolph, and T. R. Stiles, St. Johnsbury; to the Maine Medical Association, Dr. T. T. Gorkin, White River Junction; to the New Hampshire Medical Society, Dr. C. S. Scofield, Richford; to the Massachusetts Medical Society, Dr. C. B. Ross, West Rutland; to the Connecticut State Medical Society, Dr. H. H. Lee, Wells River; to the Rhode Island Medical Society, Dr. Donly C. Hawley, Burlington, and to the Medical Society of the State of New York, Dr. G. R. Anderson, Brattleboro. The next meeting will be held in Burlington.

GENERAL

Clinical Congress in New York City.—The Clinical Congress of Surgeons of North America will hold its third annual session in New York City, November 11-16, under the presidency of Dr. Albert J. Ochsner, Chicago. The headquarters will be at the Waldorf-Astoria. Clinics on general surgery, gynecology, obstetrics, genito-urinary surgery, orthopedics and surgery of the eye, ear, nose and throat, and demonstrations in radiology, pathology and other specialties will be given by leading physicians and clinicians of Greater New York at the principal hospitals each day from 8 a. m. to 5 p. m., and six evening meetings will be held, at which papers dealing with live surgical subjects will be read by eminent American and European surgeons.

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Railway Surgeons Elect Officers.—Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association at Duluth, October 10-11: president, Dr. Frank S. Wiley, Fond du Lac, Wis.; secretary-treasurer, Dr. John H. Rishmiller, Minneapolis (reelected). Meeting next year in Milwaukee.——American Association of Railway Surgeons at Chicago, October 16-18: Dr. S. C. Plummer, Chicago, president; Drs. W. J. Means, Columbus, Ohio, J. H. Rishmiller, Minneapolis, and Battle Malone, Memphis, Tenn., vice-presidents. Meeting next year in Chicago.——Association of Surgeons of the Atlantic Coast Line Railway at Richmond, October 15: Dr. John S. McEwan, Orlando, Fla., president; Dr. C. P. Aimar, Charleston, S. C., secretary-treasurer (reelected).

News Concerning Various Swindlers, Embezzlers, Etc.—THE JOURNAL has received a large number of letters from which we summarize the following information for the benefit of those whom it may concern: —*Maynard*—This man, concerning whom THE JOURNAL published a warning October 5, p. 1303, was apprehended through the prompt action of Dr. W. L. Albin, University Place, Neb. Sheriff Knowles went to Nebraska and took the man to Adrian, Mich., to answer the charge of embezzlement.——*Sykora*—Many physicians have complained of one L. C. Sykora, an electric supply man, for withholding money paid for goods and for receiving apparatus for repair and not returning it. He seems to have victimized physicians in Peoria, Chicago, Rockford and elsewhere, as well as the Chicago Telephone Co. and the General Electric Co. The William Meyer Co., Chicago, have also been put to great inconvenience through the activities of this man. They state that he has been apprehended and put in jail through the work of detectives who were put on the man's track by a Muskegon (Mich.) physician whom Sykora is said to have swindled.——*Braun*—This man, mentioned in THE JOURNAL, September 28, p. 1204, as having stolen medical instruments, etc., is wanted by the Pinkerton Detective Agency. According to their information, he has gone by the additional names of Dr. J. Buxton Jacks, Dr. Buffin Barrow Jacks and Dr. Louis Jacques. Quarantine Officer Claude C. Pierce, Cristobal, C. Z., writes that he can give evidence against this man.——*Castle*—An agent who used the name of H. C. Castle is a stocky, short man with glasses and mustache and an unusual amount of gold fillings in his teeth. He understands medicine well, and pretends to operate for the Providence (R. I.) Electric Manufacturing Co. He takes orders for electric endoscopes made by the American Endoscope Co., also of Providence. According to Dr. W. P. Clancy, of Warren, Pa., who writes us, this man takes orders, secures part payment and makes no return.—— All these instances emphasize that physicians should be extremely careful before paying money to unidentified strangers.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Oct. 12, 1912.

The National Insurance Act

While the insurance commissioners are already busy putting the insurance act into force, practically the whole medical profession is consolidating the defense against it. The almost unanimous handing over to the British Medical Association of the resignations of the contract practice of the country has forestalled the adoption by the government of one alternative —that of handing over to the friendly societies the administration of medical benefit—in case they cannot arrange terms with the physicians. As many as 23,000 resignations affecting 6,042 physicians holding contract appointments have been received. The only alternative left to the government—the organization of a state medical service—mentioned in my last letter, has been received with approval by the liberal and labor press. The labor party, of course, warmly supports the proposal, as it would be another instalment of the socialistic legislation which the party is constantly demanding. The proposal will prove most unacceptable to the medical profession, except a very small socialistic minority. It will evidently be the government's strongest card in the struggle and it may play an important part in determining a compromise on the final offer which the government will make. In well-informed quarters this is stated to be an advance of $5,000,000 on the amount previously allotted to medical benefit. The profession's present demands are estimated to require an advance of £20,000,000 on the present terms. Of course, it would be impossible for the government to establish at once a state medical service sufficient to work the act, but a beginning could be made, and once started, the scheme would almost certainly develop. The service would be in line with the whole tendency of modern legislation in this country, which is for the state to interfere more and more in the prevention and treatment of disease. Already the number of state-employed physicians, some only part time, amounts to about 2,000. These include poor-law physicians (for paupers in receipt of state relief), factory surgeons (who assist in the administration of the factory acts), health officers, school medical officers and vaccination officers. It is calculated that a state service for the insurance act would cost about $15,000,000 and would require 5,500 physicians. The profession is on the eve of a crisis unprecedented in its history and fraught with the most momentous issues. The final decision whether to accept the government's compromise or not will rest with the divisions of the British Medical Association, about 230 in number. When the government's final offer is made it will be considered by the divisions of the association who will appoint a delegate to attend a special meeting in London in the first or second week of November, where the final action of the association will be determined.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Oct. 4, 1912.

Second National Convention on Refrigeration

The refrigerating industry, which has reached such an enormous development in the United States, may perhaps be considered to have originated in France. Charles Tellier, a Norman engineer, in 1876, sent frozen meats from Rouen to Buenos Aires in the French ship *Le Frigorifique*, thus proving the possibility of transporting from one continent to another the most perishable foodstuffs. The scheme did not meet financial favor in France and even the name of Charles Tellier was forgotten. Only recently has justice been done to the originator of cold storage and his name connected with the employment of cold in feeding. At the second Congrès du froid, which was called at Toulouse, September 22-25, a new section, intended to study the use of refrigeration in medicine and hygiene, was added to the other five: the sections on refrigerating substances and low temperatures, the employment of refrigeration in food, in industry, in transportation, and legislative and administrative enactments regarding refrigeration.

EMPLOYMENT OF COLD IN THERAPEUTICS

Dr. Lortat-Jacob of Paris distinguishes general crymotherapy and local crymotherapy. In general crymotherapy cold rooms are used in which the temperature is — 5 degrees C. (23 F.). Especially in America these rooms have been used to advantage in treating attacks of asthma and hay-fever. In those countries in which there is sleeping-sickness the physicians have placed the patients in a cold room with the idea of surrounding the pathogenic organism with an unfavorable environment. In some cases the results have been good but there have not been trials enough to justify any sweeping conclusions. The success which has been obtained in local crymotherapy by dermatologists is well known. Pencils of carbon dioxid snow have been used in the treatment of nevi, lupus erythematosus, certain tuberculous ulcerations, cicatricial keloid, etc. In the treatment of cancer the results are more uncertain and less satisfactory. Common snow has been used in treating rheumatism and sciatica in Norway. Fresh snow is applied for a short time followed by massage. The reaction which follows this application has resulted in some remarkable cures especially in sciatica.

For massaging with snow the hoar frost might be utilized which collects on the refrigerating pipes in the cold rooms. Dr. Letulle uses carbon dioxid snow at the pit of the stomach of tuberculous patients to stimulate the appetite. Liquid air gives low temperatures but its rapid evaporation interferes with its use.

Dr. Paul Delbet of Paris reported seven cases of tuberculous ulcerations entirely cured by carbon dioxid snow, and declared this treatment superior to surgical intervention, provided that the application is energetic and kept up for at least a minute.

Dr. Apert, physician for the hospitals of Paris, drew attention to the installation of apparatus to cool the air in summer in hospital wards for infants with estival gastro-enteritis. While infant mortality during the summer months depends largely on changes in cow's milk brought about by summer temperature, the state of the atmosphere itself plays a part. The mortality from great heat among breast-fed infants is less than among those fed by bottle, but is nevertheless three or four times more than the normal death-rate. During the hot summer of 1911 the infant mortality was increased proportionally almost as much among the breast-fed as among

the bottle-fed infants. The statistical curves show that notwithstanding the reduction of mortality by hygienic efforts, the surrounding air weakens breast-fed and bottle-fed infants alike. It is difficult to reduce the temperature of infants by cold baths because the infant does not stand the treatment well. Besides, infants often are already below normal in temperature, or the limbs are cold while the temperature of the body is high. While the rooms in which the infants are kept may be cooled by pieces of ice in a bath-tub near the bed, or by the constant circulation of water in the radiators, these means are insufficient, and there should be a cooling-plant for use in summer just as there is a heating-plant for warmth in winter.

A resolution was unanimously adopted that all hospitals should be equipped with cooling apparatus, and that in Paris the first step should be taken in infant asylums and the infant wards of the regular hospitals.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Oct. 4, 1912.

Personal

The prominent physiologist, Prof. Hermann Munk, formerly professor of physiology at the veterinary college in Berlin, died in Berlin, October 1, at the age of 72. Munk belonged to the most important and successful investigators in the field of his profession. He deserves credit especially for his share in the extraordinarily valuable progress in the physiology of the cerebral cortex. Together with Professor Hitzig, the deceased psychiatrist of Halle, he established, through experiments on monkeys, the location of the motor and sensory centers in the cerebral cortex, and with this established the connection in general of the consciousness and mentality with the cerebral cortex. Everyone knows the fundamental importance of these findings also for the pathology and therapy of the brain, and how they have led especially to the advancement of brain surgery.

Munk was born in Posen, Feb. 3, 1839, and studied at Göttingen and Berlin as a pupil of Johannes Müller, Hanle, Weber, Du Bois-Reymond, Virchow and Traube. In 1862 he became privat-dozent, and in 1869 professor extraordinary in Berlin. In 1876 he was called as professor ordinary of physiology to the veterinary school, and in 1880 he was appointed a regular member of the Prussian Academy of Sciences, and in 1897 regular honorary professor. After the death of Du Bois-Reymond, Munk was proposed by the Berlin faculty, in the first place, as his successor. The government refused, in spite of Munk's prominence, and solely on account of his Jewish denomination, to enter into any transaction with him, a fact which, like many other similar occurrences, does not add to the fame of the Prussian government. In 1907 Munk resigned his office for reasons of health. The number of literary works produced by him is very extensive. When he was a student he delivered at Göttingen an excellent report of research on the finer structure of primitive muscular fibers. In Berlin he wrote a prize work on egg and sperm formation and fertilization of the nematodes. As assistant of Du Bois-Reymond, his studies covered chiefly the general physiology of the nerves and muscles, especially the electric phenomena. His collected pioneer works on the cerebral cortex were published in the eighties under the title "Ueber die Funktionen der Grosshirnrinde." His later works treat of the cardiac and laryngeal nerves, cataphonia, milk secretion, and the thyroid gland. Munk was an excellent speaker and a beloved teacher, high-minded and modest.

Professor Krusius, dozent at the Marburg university, has undertaken, with the help of several scholarships and the support of the Prussian and Bavarian governments, a ten-months' trip to foreign countries, to repeat on a big scale and on different races the investigations on myopia in the schools which he began some time ago in the province of Brandenburg.

Left-Handed School Children at Berlin

Dr. Schäfer, a medical school inspectbr, has made some interesting researches regarding left-handedness among Berlin school children. It is found more prominent in the lower classes, while the left-handed pupils of the upper classes either learn to use the right hand and are no longer conscious of their left-handedness, or they often conceal it. Heredity from parent to child was present in 16 per cent.; from the grandparents in 8 per cent., and the hereditary defect appeared in three successive generations in 2.45 per cent., with the simultaneous occurrence in blood relatives in 33.5 per cent. Altogether heredity was recognizable in 60 per cent. On the basis of these figures, the number of left-handed pupils in the Berlin public schools may be estimated at 9,265. Consequently over 9,000 children are being trained contrary to their natural inclination and this to their detriment, as is shown by their writing, drawing and hand work. It would be better, writes Dr. Schäfer, if more attention were given to this congenital condition and the compulsion to use the right hand were suspended in the case of left-handed children. The left hand should not be left untrained in left-handed children at this period of education but should be held as of the same importance in education as the right hand among the right-handed. Left-handed pupils, he affirms, should write, draw and work with the left hand, as the others do with the right.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Oct. 1, 1912.

Health Statistics for the Month of August

The most unusually wet summer with a low mean temperature has been rather favorable as regards the morbidity of the population in Vienna. Owing to the absence of sudden changes of temperature and the lack of dust, usually so troublesome at this time of year, the usual catarrhal conditions of the respiratory organs were markedly less. Diseases of the gastro-intestinal tract were also less prominent than at the corresponding time of other years. This is due chiefly to the drop in the frequency of summer diarrhea of infants. In the public dispensaries (not hospitals) the number of cases of diseases of the respiratory organs was 1,700 and of the digestive organs, 1,972; 580 new cases of tuberculosis were reported. A marked decrease was noticed in the number of infectious cases; altogether 742 cases were reported against 982 in August, 1911. There were 171 cases of scarlatina; one case of small-pox (imported from Turkey); 139 of measles; four of rubeola; twenty-seven of varicella; 120 of diphtheria; 102 of pertussis; seven of parotitis; twenty-seven of typhoid, seventeen of which were imported, and ninety-seven cases of erysipelas. The mortality was only 12.82 per thousand, against 16.81 in the same month of 1911. In August, 1912, there were six deaths less per day than occurred in August, 1911. Altogether 2,224 persons died, 51.90 per cent. males and 48.10 per cent. females. For September, which was still more wet and cool in this country, the complete figures are available, but as this was the coolest and wettest September since the meteorologic records have been kept (137 years), the number of diseases of the respiratory organs has been observed to be much higher than in other years. On the other hand, the number of patients visiting the out-patient departments in our hospitals and ambulatories is reported as being extremely small, so that the work is now easily done by a few men.

Marriages

A. V. BANES, M.D., St. Joseph, Mo., to Mrs. Lillie Cassel Neal of Washington, D. C., at Monhegan Island, off Portland, Me., August 29.

SAMUEL JAY TURNBULL, M.D., M.C., U. S. Army, to Miss Helen C. Chandlee, at Washington, D. C., October 9.

WALTER LEWIS SCOFIELD, M.D., Stamford, Conn., to Miss Frances Gould of South Clinton, Conn., October 2.

WILLIAM BUCKLEY PECK, M.D., Freeport, Ill., to Miss Alvina Scherf of Rockford, Ill., in Chicago, September 26.

ROBERT CHILDERS MCELVAIN, M.D., St. Louis, to Miss Florence Thelma Coulter, at Joplin, Mo., October 10.

JOHN QUINCE ROANE, M.D., Carlyle, Ill., to Miss Nellie Gertrude Steele of Whitewater, Wis., October 9.

CASIMIR CHARLES GROBLEWSKI, M.D., Plymouth, Pa., to Miss Lucy Butkiewicz of Nanticoke, Pa., October 8.

WILLIAM EASTERLY ASHTON, M.D., to Miss Caroline E. Sullivant, both of Philadelphia, October 16.

JOZSEF IRME, JR., M.D., Budapest, Hungary, to Miss Evelyn Baxter Nason of Philadelphia, October 10.

OSCAR KNUTSON, M.D., to Miss Addie Anderson, both of Dallas, Wis., at Minneapolis, October 8.

EDMUND W. RUCKER, M.D., Birmingham, Ala., to Miss Lillian Hill of Montgomery, Ala., October 16.

AMBROSE ELISHA POTTER, M.D., to Miss Rose Rathbone, both of Springfield, Mo., October 5.

THURMAN C. SIFFERT, M.D., to Miss Inez Holden, both of Canton, O., at Kent, O., October 9.

HERBERT S. GUTHRIE, M.D., Louisville, to Miss Nellie Dean of Jeffersonville, Ind., October 7.

FRED W. HEYDE, M.D., Detroit, to Miss Cora Maine of Galion, O., in Windsor, Ont., October 1.

FERRIS SUMMERBELL, M.D., Nahma, Mich., to Miss Josephine King of Omro, Wis., October 1.

JANE CATHERINE HUGHES, M.D., and M. F. Sullivan, both of Mankato, Minn., recently.

JESSE SAMUEL LANCASTER, M.D., to Miss Mildred Post, both of York, Neb., October 2.

WILLIAM B. WESCOTT, M.D., Montgomery, Ala., to Miss Bonnie Andrews, October 9.

DILLIS S. CONNER, M.D., to Miss Elsie Lehman, both of Cannelton, Ind., recently.

Deaths

George Henry Knight, M.D. New York University, New York City, 1882; a prominent practitioner and legislator of Connecticut; died while making a political speech in his home town of Lakeville, October 4, from heart disease, aged 56. After his graduation from medical college he served as superintendent of the State Institute for Feeble-Minded Children, Faribault, Minn., and from 1885 until the time of his death he was superintendent of the School for Imbeciles, Lakeville, Conn., of which his father had been superintendent for many years. Dr. Knight was a member of the American Medical Association and in 1910 was appointed chairman of the State Tuberculosis Commission. From 1901 to 1903 he served on the staff of Governor McLean as surgeon-general. He had also served as a member of the State Board of Pardons. Dr. Knight was a member of the General Assembly from the town of Salisbury at the sessions of 1907, 1909 and 1911 and did splendid work for the state as chairman of the committees on appropriations, public health and safety, and humane institution. At the last state Republican convention he was candidate for governor but withdrew in favor of Judge Studley; he was the unanimous choice of the Republican convention for congressman from the fifth district, and it was while in attendance at a political gathering in Lakeville, that he was seized with his fatal illness.

Franklin R. Pitner, M.D. Transylvania University, Lexington, Ky., 1837; a resident of Illinois since 1830 and a practitioner of Clay City for seventy-five years; a member of the Illinois legislature in 1844; who went to California during the gold fever in 1850 and remained there two years; for several years president of the district medical society; died at the home of his son in Clay City, October 4, one week before his one-hundredth birthday.

Henry Johns Rhett, M.D. University of Pennsylvania, Philadelphia, 1890; a member of the Medical Association of the District of Columbia; of Washington, D. C., and Philadelphia; who was taken ill at his summer home in Jamestown, R. I., about two weeks before, died in the Newport, R. I., Hospital, October 7, from pneumonia following a surgical operation on the intestines, aged 52.

John Fannin Young Paine, M.D. Tulane University, New Orleans, 1861; a member of the Louisiana State Medical Society; surgeon in the Confederate service during the Civil War serving with the Seventh Louisiana Infantry; formerly professor of obstetrics and gynecology in the University of Texas, Galveston; died at his home in Charlestown, W. Va., October 2, aged 72.

John Dempster Taylor, M.D. Jefferson Medical College, 1891; of Minot; a member and once treasurer of the North Dakota State Medical Association; physician and member of the insanity board of Ward County; superintendent of the Minot Board of Health; died in a hospital in St. Paul, October 9, after a surgical operation, aged 53.

Edward Bond Foote, Jr., M.D. College of Physicians and Surgeons, New York City, 1876; a pioneer in eugenics and one of the first advocates of the teaching of sex hygiene in the public schools; conspicuous as a humanitarian; died at his home in New York City, October 12, aged 58.

Walter Savage Whitmore, M.D. New York University, New York City, 1887; of Oceanic, N. J.; a member of the Medical Society of New Jersey; died in the Long Branch Hospital, October 11, two days after an operation for appendicitis, aged 63.

William Brewster Clark, M.D. College of Physicians and Surgeons, New York City, 1879; a member of the American Medical Association and the New York Academy of Medicine; medical referee and chief examiner for the Mutual Benefit Life Insurance Company of Newark, N. J.; died at his home in New York City, October 11, aged 62.

Lee Ervin Brownrigg, M.D. Rush Medical College, 1899; died recently at his home in Frederick, Wyo., from the effects of a gunshot wound of the head, believed to have been self-inflicted with suicidal intent while despondent over financial matters.

Pierce H. Power, M.D. University of Dublin, Ireland, 1887; surgeon in the Royal Army Medical Corps during the Ashanti Campaign in West Africa; a practitioner of British Columbia since 1895; died at his home in Vancouver, August 28, aged 46.

Gist Palmer, M.D. College of Physicians and Surgeons, New York City, 1894; a member of the West Virginia State Medical Association; of Wellsboro; died in a hospital in Pittsburgh, Pa., October 7, from tuberculous peritonitis, aged 42.

Alonzo C. McClellan, M.D. Howard University, Washington, D. C., 1880; a leading colored practitioner of Charleston, S. C.; founder of the Colored Hospital and Training School for Nurses; died at his home in Charleston, October 4, aged 57.

John P. Atkinson, M.D. Atlanta College of Physicians and Surgeons, 1900; a member of the Medical Association of Georgia; of Milledgeville; died at the home of his mother, in Newnan, Ga., October 4, from abscess of the brain, aged 31.

John Coulson Howie, M.D. University of Glasgow, Scotland; for fourteen years a practitioner of Glasgow but since 1909 a resident of St. Catharines, Ont.; died in the General and Marine Hospital in that city, October 3, aged 49.

William Gilbert Wilson, M.D. Cincinnati College of Medicine and Surgery, 1876; a member of the Medical Society of the State of Pennsylvania; died at his home in New Castle, October 8, from cerebral hemorrhage, aged 62.

Richard R. Lansing, M.D. Detroit College of Medicine, 1889; for two years professor of chemistry in his alma mater; formerly coroner of Wayne County; died at his home in Detroit, October 11, from acute intestinal disease.

Leonidas H. McCoy, M.D. Medical College of Ohio, Cincinnati, 1881; vice-president of the Lake, Ind., State Bank, and president of the Lake Realty Company; died at his home in Richland City, Ind., October 7, aged 61.

Leverett E. Goodell, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1864; a pioneer practitioner of Iowa but for more than forty years a resident of Nebraska; died at his home in Wilber, September 23, aged 78.

Robert Emmett Wilson, M.D. University of Virginia, Charlottesville, 1910; afterward an intern in the Waltham (Mass.) Hospital; died at the home of his parents in Charlottesville, October 8, from tuberculosis, aged 24.

Robert J. Grimes, M.D. University of Pennsylvania, Philadelphia, 1875; a member of the Medical Society of the State of North Carolina; died at his home in Bethel, from appendicitis, September 28, aged 60.

James A. Leech (license, Colorado, ten year clause, 1897); for thirty years a resident of Colorado Springs, and formerly an alderman and a member of the school board; died in a local hospital, October 6, aged 63.

Samuel Dale Clarke, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1879; for nearly thirty years a practitioner of Verona, Pa., and later a resident of Oakmont; died at his home, October 8, aged 68.

Frank R. Wilson (license, Iowa, practitioner, 1886); a member of the American Medical Association; a practitioner of Iowa since 1873; died at his home in New London, October 6, from nephritis, aged 60.

Turner W. Avery, M.D. Keokuk (Ia.) Medical College, 1895; of DeWitt, Mo.; a member of the American Medical Association; died at the home of his mother in Higbee, Mo., October 3, from dropsy, aged 42.

Arthur Leonard Fulton, M.D. Missouri Medical College, St Louis, 1897; of St. Louis; formerly a member of the St. Louis Medical Society; died in Medina, Tex., September 1, from tuberculosis, aged 39.

Hubbard Kavanaugh Adamson, M.D. New York University, New York City, 1876; of Maysville, Ky.; died in the Kentucky State Hospital, Lexington, October 9, aged 58.

James W. Reeves, M.D. Kentucky School of Medicine, Louisville, 1887; died at his home in Rockdale, Tex., October 4, from nephritis.

Charles Edward Bean, M.D. University of Louisville, Ky., 1877; of St. Paul, Minn.; formerly a member of the American Laryngological Association and consulting laryngologist to the City and County and St. Luke's hospitals, St. Paul; died in the City Hospital, September 9, aged 55.

Raleigh C. Brenizer, M.D. Marquette University, Milwaukee, Wis., 1895; of Loganville and later of Ironton, Wis.; died in the Reedsburg (Wis.) Hospital, October 11, from cerebral hemorrhage, aged 45.

John A. Mack, M.D. Bennett Medical College, Chicago, 1878; a veteran of the Civil War and a resident of San Bernardino County, Cal., since 1886; died at his home in San Bernardino, October 9, aged 70.

Judson Stanley Gibbs, M.D. University of Syracuse, N. Y., 1876; of Hinkley, Cal.; was almost instantly killed by the cave-in of a well in which he was working, September 9, aged 63.

John W. Hughes, M.D. College of Physicians and Surgeons, Baltimore, 1911; of Pawtucket, R. I.; died at the home of his father in Westerly, R. I., September 26, from nephritis, aged 29.

Jesse F. Trippett (license, West Virginia, 1904); a member of the West Virginia State Medical Association; died at his home in Fairview, W. Va., August 20, from tuberculosis, aged 36.

James William Porter, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1878; College of Physicians and Surgeons, Chicago, 1889; died at his home in Hedrick, Ia., September 28, aged 59.

Charles Elisha Slocum, Jr., M.D. College of Physicians and Surgeons, New York City, 1887; died at his home, near Bentonville, Ark., September 17, from poisoning by strychnin, aged 50.

LaFayette Sproule (license, thirty years practice, Kentucky, 1895); of Williamsburg, Ky.; a veteran of the Civil War; died in Lexington, Ky., October 10, from senile debility.

Francis E. Chase, M.D. Cleveland Medical College, Homeopathic, 1894; one of the promoters of Grace Hospital, Cleveland; died at his home in that city, October 5, aged 49.

Arthur Macauley, M.D. Rush Medical College, 1877; a member of the local United States pension examining board; died at his home in Middlesboro, Ky., September 8, aged 62.

Michael W. Gillson, M.D. New York University, New York City, 1881; a member of the Medical Society of New Jersey; died at his home in Paterson, September 15, aged 56.

Elisha Avery Hewitt, M.D. New York University, New York City, 1850; for twenty years a resident of Denver, Colo.; died at his home, October 7, from pneumonia, aged 85.

Edward M. Fuller, M.D. Hahnemann Medical College, Chicago, 1890; a member of the American Medical Association; died at his home in Chicago, October 3, aged 70.

Abraham Joseph Gossett, M.D. College of Physicians and Surgeons, New York City, 1909; of New York City; died in Monticello, N. Y., October 8, aged 25.

W. N. Fisher (license, Eclectic State Board, Texas, 1903); formerly of Gunter, Tex.; died suddenly at Bagwell, near Clarksville, October 7, aged 51.

William A. Garman, M.D. University of Pennsylvania, Philadelphia, 1849; died at his home in Berlin, Pa., October 6, from senile debility, aged 83.

Daniel Webster Loney, M.D. University of Michigan, Ann Arbor, 1885; died at his home in Norwalk, O., October 7, from uremia, aged 51.

Albert Gallatin Jones, M.D. Chicago Medical College, 1862; died at his home in Lexington, Ill., about September 18, aged 85.

LeRoy Riddell, M.D. New York University, New York City, 1863; died at his home in Canisteo, N. Y., September 17, aged 79.

John S. Garman, M.D. College of Physicians and Surgeons, Baltimore, 1878; died at his home in Berlin, Pa., October 2, aged 52.

Herbert John Anderson, M.D. University of Toronto, Ont., 1900; died at his home in Winnipeg, Man., recently, aged 37.

Harry E. Poole, M.D. McGill University, Montreal, 1880; died at his home in Brier Hill, N. Y., September 11, aged 53.

Melvin Gregg, M.D. Columbus (Ohio) Medical College, 1881; died at his home in Salineville, O., September 21, aged 58.

Miles P. Sigworth, M.D. Rush Medical College, 1866; died in his home at Anamosa, Ia., October 8, aged 74.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DIORADIN REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

A preparation called Dioradin was placed on the market as a cure for consumption three years ago in Europe and somewhat later in this country. It was first submitted to the Council in July, 1911. Because of the manifestly unwarranted claims made for its use in the treatment of tuberculosis, the Council voted that the product be refused recognition for conflict with Rule 8, without at that time taking under consideration the question whether or not it was in conflict with other rules of the Council.

In June, 1912, further consideration of Dioradin was requested. The American agent having promised a reform in the methods of advertising, the Council considered the available evidence regarding the identity and value of the preparation. Examination of evidence regarding the composition of Dioradin—claimed to consist of radium chlorid, iodoform and menthol in an ether-oil solution—showed serious discrepancies as to the amount of radium as well as to the identity and amounts of other constituents. It was further found that the experimental evidence was insufficient and biased. Then, too, in view of the difficulty of judging the effects of medicines in tuberculosis, the clinical data were unconvincing. There was nothing to prove that the reported improvements, even if they actually occurred, were to be ascribed to the mixture as a whole rather than to any one of its constituents.

As a result of these findings, the Council voted that Dioradin be refused recognition and that the publication of these facts be authorized. In accordance with its regular procedure, it also submitted the report to the agent. In reply the agent submitted evidence which showed that he was not responsible for the misstatements about Dioradin but offered no facts that affected the Council's findings.

The entire matter having been referred to a second referee, minor modifications of the first draft of the report were authorized. Since then the Dioradin Company has submitted two reports of examinations of Dioradin made for the company in Germany showing a higher radium content than that previously found. These reports do not alter the facts brought out in the report of the Council that the composition of Dioradin has been variable, which past variability arouses a feeling of uncertainty or lack of confidence. In view of this the amended report was ordered published and appears below

W. A. PUCKNER, Secretary.

FIRST SUBMISSION OF DIORADIN

Dioradin, a preparation for the treatment of consumption originated by Dr. R. de Szendeffy, Budapest, Hungary, was submitted to the Council by Louis Gero, Ltd., New York, with the following statement of composition:

> "A radio-active preparation of Menthol, Iodin and Radium Barium Chlorid 1/10 of a drop; in ether solution."

A circular which accompanied the submission stated:

> "Preparation No. 3 of Dioradin contains not only terpins but also Iodin salts . . . In view of the fact that emanations of the radium as well as the combinations of the evasive Iodin terpins enter into the organism through the lung . . ."

Later these indefinite statements of composition were supplemented by the following:

> "In 100 c.c. there are:
> 1 gr. Iodoform.
> 5 " Menthol.
> 10 drops Radium chlorid solution (1 milligr. in 100 c.c. of water).
> 5 gr. ether.
> 90 " Oil (ol. amygd. frig. press)."

In a circular contained in the package these claims were made:

"The preparations of the Dioradin are based on the miraculous effects which scientific researches have shown in regard to the different sicknesses treated with radium.

"It is generally known that radium, even if externally employed, has proved itself to be a bactericidal remedy. Its effect is multiplied if one employs it internally even in infinitesimal doses, in consequence of its permanent action of emanation on the organism.

"The preparations of the Dioradin contain the radium itself. For this reason their antiseptic and bactericidal effect is much more intensive than with medicaments which contain only its emanation, which disappears in a short time."

In view of the general extravagance of the claims made for its therapeutic action the preparation was rejected without considering other possible conflicts with the rules of the Council.

SECOND SUBMISSION OF DIORADIN

Having been advised of the rejection by the Council of Dioradin the American agency, which in the meantime had become the Dioradin Co., requested further consideration. The Council therefore took up the subject again. After certain typographical errors had been corrected the following was now given as the composition:

"1 gram Iodoform.
5 grams Menthol.
10 drops Radium Chlorid Solution (containing 1 milligram of radium chlorid in 100 cubic centimeters of water).
5 grams Ether.
80 grams expressed oil of almond.
This liquid is put up in ampules containing one cubic centimeter of liquid."

In support of the therapeutic claims for Dioradin the American agent submitted literature consisting chiefly of articles by Dr. Bernheim of Paris. Before reporting on the requested reconsideration of Dioradin the referee directed the secretary of the Council to point out to the American agent that in the formula given, the amount of non-volatile matter should be about 90 per cent., whereas the report of the Lederle Laboratories which accompanied the request for reconsideration states that but 72.08 per cent. was found in the analysis. In reply the agent stated that he had called the attention of Dr. Szendeffy (the originator of Dioradin) to the discrepancies concerning non-volatile matter and that he felt sure the discrepancy was wholly accidental (*sic*). In a later communication the agent submitted a statement of analysis from the Lederle Laboratories of a new specimen of Dioradin according to which the amount of non-volatile matter agreed essentially with the amount claimed by the agent.

The referee, having examined the evidence, is of the opinion that the statement of composition is misleading and that the therapeutic claims are unwarranted, thus:

DISCREPANCIES IN RADIUM CONTENT

The chief claims for its therapeutic value are based on the radium content, yet the discrepancies and contradictions regarding this are serious.

In connection with the reconsideration of this product the agent presented a certificate of chemical examination by the Lederle Laboratories in which the following statement was made as to the radio-activity:

"Examination shows the preparation to possess slight radio-activity, corresponding in activity to less than 1-10,000 of 1 milligram of radium bromid per ampule. According to the sworn statement of Dr. A. de Szendeffy, the originator of Dioradin, the preparation contains 10 drops of radium chlorid solution (1 milligram in 100 cubic centimeters of water) in 100 cubic centimeters of the preparation. This would correspond to 5-1,000 milligram of radium chlorid in 100 cubic centimeters or about 1-20,000 of 1 milligram per ampule."

A cursory reading of this paragraph gives the impression that Dioradin possesses fully the amount of radio-activity claimed by its originator, Dr. A. de Szendeffy. This impression is greatly strengthened by the concluding paragraph of the Lederle report, which says:

"In conclusion, our examination shows that the preparation submitted to us as Dioradin possesses radio-activity, and contains a fixed oil (apparently expressed oil of almond), iodoform, menthol and ether, thus confirming the sworn statement of Dr. A. de Szendeffy in regard to the composition of this product."

On inquiry as to the method used by the Lederle Laboratories, in determining radio-activity the agent submitted a further statement from the Lederle Laboratories which describes the gamma ray test by which the determination was made and a radium value equivalent to 0.000041 mg. of radium bromid per capsule was obtained. The report then says:

"The variations of the single measurements from the mean in the case of the natural leak and the leak with the Dioradin near were so large that we did not feel justified in assigning much accuracy to the figure, 0.000041, but stated that the amount of radium per capsule could not be greater than 0.0001 mg., with the possibility of there being a much smaller amount present."

It is evident that the wording of the reports of the Lederle Laboratories is liable to give the impression that their examination confirms the claims made for Dioradin.

It is further evident from these reports that the amount of radio-active matter has not been definitely ascertained but that it is at the best very small. The unreliability of the claims for radium content of Dioradin was recently shown by Buechner,[1] who found a specimen obtained from an apothecary to contain but 1-1000 of the amount claimed.

VOLATILE AND NON-VOLATILE MATTER

The varying claims regarding the content of volatile and non-volatile matter throw doubt on the entire composition of Dioradin, for if the statement as to these is wrong the rest of the statement regarding composition cannot be given credence.

In the first submission of Dioradin about 89 per cent. of non-volatile matter was claimed but in the report of the analysis by the Lederle Laboratories, which accompanied the resubmission, only about 72 per cent. was found. Later the Lederle Laboratories reported that an examination of a new specimen of Dioradin had shown about 90 per cent. of non-volatile matter. The discrepancies between the composition claimed for Dioradin and that found for the product in the first Lederle report has shown that the agent was quite ignorant of the composition of the product which he was selling.

INDEFINITENESS OF THE IODIN CONTENT

The label on the trade package of Dioradin first submitted to the Council stated that the product contained iodoform; a similar statement was made in the submission of the product; the circular accompanying the first submission stated that "iodin salts" were contained in the product while the iodin content was referred to further on in this circular as "combinations of evasive iodin terpins." In Bernheim's papers, which have been used to advertise Dioradin, and which are referred to in the same circular, the iodin compound is called "iode peptonisé," which, according to information stated by the American agent to have come from Budapest, is to be translated "iodized peptone." What is the meaning of this confusion? One would naturally suppose that the preparation to be sold in this country contains iodoform in an ether-oil solution while the one used by Bernheim and Dieupart[2] was stated to contain an *ethereal* solution of "iodized peptone." This is another mystification, for an ethereal solution of any kind of peptone would be a novelty. The matter was of some importance, for Bernheim and Dieupart lay great stress on the difference between "peptonized iodin" and other iodin (loc. cit., p. 333) and of the superiority of ethereal over oily solutions (loc. cit., p. 334). The American agents, however, in the second submission, state that this is all a mistake; that the Dioradin used by Bernheim is the same Dioradin which was submitted to the Council; and that this does not contain, and never did contain, the ethereal solution of "iode peptonisé" to which Bernheim attached so great importance. Bernheim (report to Medical Congress of Lyons) himself has come to the same conclusion; for five months after his first paper he believes that the "special salt of radium" *(sic)* is the principal agent; so that the "peptonized iodin" must be unimportant, and in a cablegram of July 4, 1912, he now informs the Dioradin Company that the formula was incorrectly given in his first papers "owing to my ignorance of actual composition;" and that all the Dioradin used by him was of the composition stated in the submission to the Council.

1. Buechner: Pharm. Weekblad, March 2, 1912, p. 161.
2. Bernheim and Dieupart: Revue Internationale de la Tuberculose, May, 1911, p. 336.

While this vindicates the good faith of the American Dioradin Company, it does not clear up the mystery. The question occurs at once: What led Dr. Bernheim to make such positive statements? Was he drawing purely on his imagination? If so, why did his imagination take this peculiar, special direction? Or if he did have some reason to imagine the "iode peptonisé," who supplied this reason? And if, at that time, he was given to understand by Szendeffy, who must have supplied him with the material, that it contained the iodized peptone, how can he be positive at this time, that it did not contain it? Has he actually analyzed the old material?

There is also a further question which needs to be answered. Why has Dr. Szendeffy waited until Dioradin was rejected by the Council before correcting Bernheim's serious misapprehension, in the meantime permitting the circulation of Bernheim's paper?

Until these questions have been satisfactorily answered, the element of mystery about the composition of Dioradin cannot be cleared away.

EXPERIMENTAL EVIDENCE

The available experimental evidence regarding "Dioradin" is restricted to some quotations from its inventor Szendeffy, in the paper of Bernheim and Dieupart (p. 334). These, if confirmed, would show that radium alone has practically no effect on cultures of tubercle or colon bacilli; that 0.1 gm. of "iodementhol" (concentration not stated) checks the growth of the acid-fast organisms; and that this antiseptic efficiency can be nearly doubled by the addition of a little radium. No quantitative data are given, so that it is difficult to judge the accuracy of the observation. Granting that it is correct, it would have little bearing on the therapeutic actions of Dioradin, for there is nothing to show that the effective test-tube concentration is reached in the pulmonary tissues.

It is also claimed that the injection of Dioradin prevents tubercle infection. The referee believes that the Council and the medical profession should hesitate to accept this conclusion without further details; and these would require confirmation by unprejudiced observers.

CLINICAL EVIDENCE

The Dioradin Company submits considerable clinical data in favor of Dioradin. It must be remembered that most favorable opinions have been published, from time to time, about scores of "consumption cures," which have mysteriously lost their efficiency when their novelty wore away. There is no more reason to doubt the good faith of those who are enthusiastic about Dioradin than of those who have been enthusiastic about other "cures." There appear to be features in the course of tuberculosis which make the judgment of therapeutic measures peculiarly difficult. It is possible that impartial clinical trials of Dioradin by tuberculosis experts appointed by the Council might facilitate judgment as to the actual efficiency of Dioradin. The referee doubts, however, whether this would advance the Council very much toward the acceptance of the substance. Such an investigation would be so lengthy, that it should not be undertaken until the Dioradin Company itself has offered at least presumptive evidence in this direction, especially in view of the adverse report recently made by Cecil Wall.[3] Ten tuberculous patients were treated by Wall in strict accordance with the method outlined to him by Bernheim, yet Wall concludes that none of the cases, though treated accurately in accordance with the instructions, can be quoted to justify any of the claims for the therapeutic efficiency of Dioradin. The Council cannot undertake lengthy investigations of this character, until it is put in possession of data which would show to its satisfaction that such investigations would probably be fruitful.

CONCLUSIONS

From investigations made, it appears that the claims in regard to the composition of Dioradin have contained vague statements and contradictions which arouse a feeling of uncertainty and lack of confidence. Until this uncertainty is cleared away, Dioradin cannot be considered as complying with Rule 1. The experimental data are insufficient and unconvincing. Some favorable clinical reports have been submitted, but the accuracy of the observations is to be questioned and they are more than offset by the negative results observed by Cecil Wall. As might be expected, other negative results, if observed, have not been submitted and there is nothing in the manufacturer's claim to show whether the improvement reported is really due to the peculiar mixture called Dioradin or to any one of its ingredients.

It is therefore recommended that Dioradin be not accepted for New and Nonofficial Remedies. In view of the extensive advertising of this preparation and because of the admittedly incorrect statements in the earlier papers it is recommended that publication of this report be authorized.

3. Wall, C.: Brit. Med. Jour., July 20, 1912, p. 109.

Correspondence

Rat and Mosquito Extermination in Queensland

To the Editor:—Perusal of your interesting article on "The Rat as a Source of Economic and Health Waste" in THE JOURNAL, Aug. 17, 1912 (p. 548) has led me to forward herewith copies of recent public health legislation and orders made thereunder in this state, in respect to rats and mosquitoes. An extensive organization for rat-destruction on the ordinary lines has been in operation in Brisbane for some ten years past. A detailed survey carried out in 1910 and 1911 showed that rats were being enabled to breed just about as fast as my department's men could destroy them, owing to the apathy and neglect of householders. The provisions of Section 132F of the Amending Health Act and the subsequent order based thereon were designed to check this. It is too early yet to speak of results, but if the last two sentences of your article represent the gist of the rat-reduction case—as I believe they do—it may be possible to supply some applicable data in the course of the next year or two.

J. S. C. ELKINGTON, Brisbane, Queensland.
Commissioner of Public Health.

[COMMENT.—The portion of our editorial referred to by our correspondent relates to the extermination of the rat by building him out of existence and waging a continuous, vigilant warfare against him by the individual property-owner. Section 132F of the Queensland Health Acts provides that "Whenever the governor in council is satisfied that a visitation of any epidemic, endemic or infectious disease may be prevented, or that the spread or continuance of any such disease may be checked, diminished or prevented by taking measures for the destruction of rats, mice or other vermin, or any insect life, he may, by order in council . . . (duly published) declare rats, mice or other vermin, or any specified form of insect life, to be noxious, and direct that owners and occupiers of all or any premises shall adopt such measures as are prescribed in the order, for the purpose of destroying such vermin and insect life, preventing their breeding and preventing their access to such premises . . . It is also provided that such order may be in general terms or may be of limited duration or of limited application to any specific areas or localities, and may prescribe any special measures to be adopted and carried out at the expense of the property-owners. In default, the commissioner of health may go on the property and carry out such measures as are necessary and charge the expense thereof to the property-owner, which expense may be recovered in the courts, with a penalty added. Among the blanks provided by the health authorities are cards to be filled out by the inspectors and filed in the office giving a complete survey of each property with reference to rats and mosquitoes, notices to property-owners that on written application to the department of public health skilled men may be arranged for to exterminate the rats and mosquitoes—at the expense of the property-owner, of course—and other blanks for notifying them when in default and specifying a time within which the order must be complied with. It will thus be seen that in Queensland the extermination of vermin and insects of noxious or disease-carrying character is a matter of public statute which may be made of general application, and it is

not left to the discretion of local health boards to carry out such measures. As stated by our correspondent, the vigorous enforcement of this statute should furnish some valuable data regarding rat and mosquito extermination and the prevalence of rat- and mosquito-borne diseases.—Ed.]

Collective Investigation of Ulcer of the Stomach

To the Editor:—At the invitation of the German committee for this investigation, a similar committee has been formed in this country, consisting of Drs. George Brewer, Warren Coleman, Max Einhorn, James Ewing, J. M. T. Finney, Arpad G. Gerster, John C. Hemmeter, Frederic Kammerer, J. Kaufmann, William J. Mayo, Willy Meyer, William Gerry Morgan, John B. Murphy, Franz Pfaff, William L. Rodman, Charles G. Stockton and John S. Thacher.

The German committee says:

"Any one who studies the clinical aspects of gastric ulcer in an unprejudiced manner will soon come to the conclusion that our knowledge of the gravest of all benign affections of the stomach is distressingly scanty. The nature of ulcer of the stomach has not yet been explained. Even if we have been successful in producing gastric ulcers experimentally, with all their characteristic signs, yet the etiology of gastric ulcer in man is practically unknown. The explanation of the various symptoms is correspondingly difficult. The diagnosis can in most cases be made only with some degree of probability.

"Our knowledge of the nature and causes of gastric ulcer must be extended in order to enable us to recognize the trouble earlier and with greater certainty. There is at present no prophylaxis as a basis, for it is lacking. In spite of some advances, treatment is still symptomatic and the end results of internal and surgical treatment are by no means so favorable as is commonly assumed.

"In view of all these facts, we must ask ourselves whether there is any means enabling us to clear up the various mooted points in the etiology of ulcer of the stomach, thus facilitating its recognition and treatment. In the opinion of the committee, a collective investigation would be the best method.

"In the first place surgeons must be ready to send the material obtained from ulcer cases at operation (resected ulcers, pieces of mucous membrane), properly preserved to a central bureau for examination.

"Of equal importance would it be if pathologists would also send material of gastric ulcers and scar tissue from the postmortem table to the same central bureau, at the same time filling out the autopsy blank.

"Finally, it would be desirable that all clinicians, internists as well as surgeons, should fill out the history blank, but only in cases which come to operation or autopsy."

The central bureau of the American committee is the Pathologic Department of Cornell University Medical College, 477 First Avenue, New York City, where Professor Ewing will make the pathologic and bacteriologic examinations of the anatomic material. He will publish the results.

The American committee seeks the cooperation of all physicians, surgeons and pathologists who may be willing to assist. Due credit will be given in the published analysis of the cases to all who send histories and specimens.

Directions for preserving and forwarding the anatomical specimens are given on the history and autopsy blanks which are obtainable on request. The autopsy reports should be sent with the specimens to Professor Ewing. The clinical histories may be forwarded with the specimens, or may be sent direct to the undersigned.

WARREN COLEMAN, M.D., Secretary,
58 West Fifty-Fifth Street, New York City.

Correction in Article on Anaphylaxis to Salvarsan

To the Editor:—In the summary of my article on "Anaphylaxis to Salvarsan," in THE JOURNAL, Oct. 5, 1912, p. 1240, some lines have been misplaced. They should read:

"This phenomenon seems to depend on an alteration of the native serum by salvarsan so that the homologous serum acts like a foreign proteid. In patients who show anaphylactic symptoms on repeated injections of salvarsan, a similar reaction probably takes place between the patient's own serum and salvarsan."

H. F. SWIFT, New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SCHNITTER-KURASHIGE METHOD FOR DETECTING TUBERCLE BACILLI

To the Editor:—Please give a brief description of the Schnitter technic as modified by Kurashige for detecting tubercle bacilli in the blood, referred to in THE JOURNAL, Aug. 31, 1912, p. 754, in an abstract of an article by K. Kennerknecht.

V. PLETH, Guadalajara, Mexico.

ANSWER.—The description given by Kennerknecht is as follows: One c.c. of blood is drawn from the median vein and mixed with 5 c.c. of 3 per cent. solution of glacial acetic acid. It is shaken carefully to avoid formation of foam, and is allowed to stand from one-half to one hour at the most. After centrifuging for a half hour, the sediment is mixed with 5 c.c. of concentrated antiformin and stirred well; as soon as it is dissolved 5 c.c. of absolute alcohol are added, in order to reduce the specific gravity of the solution, as otherwise the sediment will collect on the surface. After centrifuging again for thirty minutes, the bottom of the tube is covered with a snow-white sediment, which is washed thoroughly with distilled water. The sediment is spread on two slides and stained, one preparation according to Ziehl-Neelsen, the other according to Much-Weiss.

Great care must be taken as to the purity of the reagents and materials. The tubes and rods are cleansed in nitric acid and boiled, or sterilized with steam, and only new slides are used which have been previously allowed to lie in nitric acid and alcohol.

LEGAL RIGHT TO OPERATE ON AN UNCONSCIOUS PERSON

To the Editor:—At times we are confronted with questions of a medicolegal nature which are dependent on the exercise of good judgment for their solution; the decision arrived at may appear correct from a medical point of view, but it may appear otherwise to the layman, and as a result we may be severely criticized.

Take, for instance, the case of a man brought to a hospital in a state of alcoholic intoxication and with a contused scalp wound. There is a question as to whether the semicoma is due to alcoholism or is the result of cerebral concussion or compression. To extend the incision and retract the pericranium so that any irregularity of the surface of the skull may be seen and felt is probably the best treatment. Have we a license to do this without the patient's consent? Is his consent of any value?

Suppose again that the man is in deep coma and that there is a fracture of the cranial vault with depression. To operate would be proper. The man has no means of being identified and there are no addresses of friends about his person. With these conditions, what legal right have we to operate or to apply any form of treatment? Then, also, presume that this person is a minor and a nonresident. To operate is imperative. Will good judgment protect the surgeon, should the parent at some future time believe otherwise?

WILLIAM J. ANDERSON, M.D., Chicago.
Night Assistant Warden, Cook County Hospital.

ANSWER.—The position of the surgeon in cases of the kind suggested is a most trying one. He must exercise good judgment and a proper amount of skill, and may still be subjected to unjust criticism, or, worse yet, to suits for malpractice. Moreover, the results of such suits seem to be so hard to forecast, depending on the way they are presented, etc., that specific rules cannot well be laid down for the surgeon. The decisions bearing on the subject reported from time to time in the medicolegal department of THE JOURNAL should aid him much, however, in determining where he stands legally in the matter.

One of the best decisions on the subject has but recently been rendered by the Supreme Court of New Jersey, in the case of Bennan *vs.* Parsonnet, 83 Atlantic Reporter 948, to be reported at length in THE JOURNAL. There it is held that the common-law rule with regard to consent must be adapted to the employment of anesthesia in surgical operations, and that when the patient has no other representative to act for him the surgeon must be deemed his representative. The last implication, it is said, accords with those analogies of the common law by which prompt and timely aid to accidentally injured or unconscious persons is secured from those not expressly authorized to render it. The justice writing the opinion says that he has no doubt that, should such an accident occasion a depression of the skull that rendered the injured person unconscious, the consent of the injured person to the necessary surgical operation would be implied at common law, although he finds no such reported case. A like analogy to some extent is found in the American decisions touching actions for compensation for services rendered to unconscious

persons. At bottom, these analogies all rest on the maxim that one is presumed to accept that which is beneficial to him, a doctrine which, if applied to commerce and the transfer of property, should surely be applied in circumstances in which life and health are at stake.

According to this decision medical attendants who are rightly in charge of a case are authorized to carry out any procedure which is vital to the life of a patient, though the interpretation would not justify unwarranted interference of a surgeon. The circumstances must be a matter of proof. The attendants at an emergency hospital or at any other institution to which a man had been brought by police or by witnesses of the accident, etc., would be authorized to do what was necessary to save a man's life or even to prevent serious untoward results which would follow the failure to carry out certain procedures such as those to which our correspondent refers.

If a man were brought to a private physician—a public hospital being too far away, perhaps—it might be wise for this physician to have a consultation so that he would have good medical testimony to bring forward in case his judgment were questioned by relatives later.

The same general reasoning will apply to the case of a minor.

QUESTIONS OF USAGE AND MEDICAL ETHICS

To the Editor:—1. In registering at a hotel, should a physician sign just plain "A. B. Jones" or "A. B. Jones, M.D."? I omit the degree and am always "Mister."

2. Which is better form in addressing an envelope, "Dr. A. B. Jones" or "A. B. Jones, M.D."? Which should be used in the heading of a letter?

3. B has attended a patient in consultation with A. After the patient recovers he suffers a relapse or again becomes sick. Is it ethical for B to attend the patient during the latter sickness?

4. B is called to see a patient for A because A is sick. What course should B follow when A resumes practice before the patient recovers?

5. A is sick or away from home and asks B to care for a patient. The patient recovers. Later the patient again becomes sick and calls B. A contends that B should not respond to the call because A introduced B into the family; except for this introduction B would never have received the call. Is A right? X. X. X.

ANSWER.—1. Register "A. B. Jones." If it is desirable that the hotel clerk should know that you are a physician or that he should use the title "Doctor" in addressing you, hand him your card when you register, which with propriety may read "Dr. Alfred Betterton Jones."

2. Both forms are correct. Personal taste determines the one used.

3. "When a physician (B) has attended a case as a consultant, he should not become the attendant of the patient during that illness except with the consent of the physician (A) who was in charge at the time of the consultation." ("Principles of Medical Ethics," Chapter II, Article III, Section 8). This principle should control B's course. In a word, B should do just what he would have A do were A in B's position. At a subsequent illness, the patient chooses the physician he wishes to employ.

4. When a physician (B) is called to the patient of another physician (A) during the enforced absence of that physician (A), the patient should be relinquished on the return of the latter (A) ("Principles of Medical Ethics," Chapter II, Article IV, Section 8).

5. If the second sickness of the patient occurred while A was still sick or away from home, B should care for the patient as in the first illness. If there was some time between the two illnesses and A had again resumed his practice, the patient was within his rights when he chose B to treat him. B should accept the case only if he would justify A in assuming charge were their positions reversed.

MAYR'S STOMACH REMEDY

To the Editor:—Please tell me about Mayr's Wonderful Stomach Remedy and cure for gall-stones. I have heard so much about it from the laity that I would like some information as to what it is. I think it comes from Mr. George H. Mayr of 40 Dearborn Street, Chicago. I. B. GAGE, M.D., Atlantic, Me.

ANSWER.—Mayr's Stomach Remedy is a fraud. It was exposed in THE JOURNAL, Aug. 19, 1911, p. 671, and the matter has been reprinted together with an article on a similar fraud—Fruitola—in the pamphlet "Fake Gall-Stone Cures," price 4 cents. The matter also appears in "Nostrums and Quackery." Briefly summarized, these nostrums, by the combined action of olive oil and salts, cause the passage from the bowels of soapy concretions, making the victim think he is passing gall-stones!

IS SODIUM CHLORID POISONOUS?

To the Editor:—In THE JOURNAL, Oct. 5, 1912, three instances are given in which sodium chlorid was used or recommended. Dr Hine advises two teaspoonfuls of table-salt in a pint of hot water for constipation (p. 1289). Is salt in this dose a poison? If not, how does it cause a movement of the bowels? Dr. Livermore, in his case of anuria following the intravenous injection of salvarsan, gave salines in enema and by the drop method (p. 1290). In view of what we are told regarding salt fever and the harmful effects of sodium chlorid in excess (Campbell's case, p. 1290), was that a wise thing to do?

I am not asking these questions in a spirit of criticism. I am looking for information. E. M. HIGHFIELD, M.D., Riverdale, Mich.

ANSWER.—As set forth in our editorial, Oct. 5, 1912, p. 1297, it is undoubted that excessive doses of salt, whether given by rectum or otherwise, may produce death, and ordinarily speaking, this may be said to be the result of poisoning. The amount recommended by Hine as a laxative or cathartic would equal 10 gm. (150 grains) or more. Doubtless many persons could take that amount of salt without harmful results but that would depend on the susceptibility of the patient to sodium chlorid poisoning. It is probable that when given by the hot-water method, described by Dr. Hine, it produced its laxative effects partially by the amount of fluid ingested and the stimulation of peristalsis and partially through the excretion of fluid into the bowel after absorption in the attempt of Nature to establish an osmotic balance. In the case of Dr. Livermore, on account of the damage to the kidneys, as evidenced by the presence of albumin casts in the urine, the administration of saline solution, on theory, may not have been a proper procedure. The outcome, however, showed that it did no permanent damage and probably assisted in reestablishing the secretion of urine. The suggestion has been made that, in cases in which the effect of sodium chlorid is feared, some other sodium salt, such as sodium bicarbonate, should be used. The observations of different men do not agree on the effects of giving salt in large quantities in defective conditions of the kidneys. For instance, M. Henkel (*München med. Wchnschr.*, Nov. 29, 1910) has found in his experience that it may be given in edema, heart defect, nephritis or eclampsia, and reports having given it to six pregnant women in doses of 10 gm. daily for a month with only beneficial results. There are numerous observations, however, on the extremely beneficial results of the salt-free diet in edema and ascites. Physicians and surgeons are evidently assuming a more conservative attitude toward the employment of salines in large quantities.

ARTIFICIAL EARS WANTED

To the Editor:—We have a patient who was born without ears having in their place just little nubs. We desire to supply him with rubber ears, if possible, for cosmetic purposes, and since we do not know of any house that supplies such articles, we take the liberty of asking who can meet our requirements.

DRS. JERKINS & STUART, Moultrie, Ga.

Society Proceedings

COMING MEETINGS

Clinical Cong. of Surgeons of North America, New York, Nov. 11-16.
Kentucky State Medical Association, Louisville, Oct. 29-31.
Southern Medical Association, Jacksonville, Fla., Nov. 12-14.

MEDICAL ASSOCIATION OF THE SOUTHWEST

Seventh Annual Meeting, held at Hot Springs, Ark., Oct. 8-10, 1912

The President, DR. A. L. BLESH, Oklahoma City, in the Chair

Officers Elected

The following officers were elected for the ensuing year: president, Dr. W. T. Wootton, Hot Springs, Ark.; vice-presidents, Dr. Walter B. Dorsett, St. Louis; Dr. E. H. Carey, Dallas, Tex.; Dr. J. H. Barnes, Enid, Okla.; Dr. C. C. Nesselrode, Kansas City, Kan.; secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla.

Kansas City, Mo., was selected as the place for holding the next meeting.

The Necessity of Gastric and Stool Analysis in Digestive Disorders

DR. E. D. HOLLAND, Hot Springs, Ark.: While the treatment of digestive disturbances with the stomach-tube is overdone the gastric juice analysis is not made nearly so often as it should be. Every case of digestive disorder that presents

itself should have a gastric juice analysis, and this analysis should be repeated every five to seven days until conditions resume their normality. Next in importance to the gastric analysis is the examination of the stool. There is absolutely no way to diagnose hookworm, in most cases, except by examining the stool, and we are finding out all the time that hookworm, like malaria, is not confined to any southern locality, but is found all over the country, although it is more frequent in the South.

DR. E. H. EASTMAN, Hot Springs, Ark.: Few realize how much abuse the stomach will stand, and how beautifully it can be made to return to its normal function when it has suffered from disease as a result of abuse. I think the average American stomach is subjected to more abuse than the stomachs of any other nationality. People in this country do not pay enough attention to the diet and to the care of their stomachs. They pour a conglomeration of food into their stomachs in a helter-skelter way, and were it not for the wonderful recuperation of the stomach, the business and society people of the United States would all be under the care of stomach specialists.

A woman came to me a short time ago suffering from stomach trouble. She had gastric neurosis, and at that time was taking Dr. Miles' Nervine for her nerves, Swamp Root for her kidneys, and some other kind of "patent medicine" for constipation. It took me about a week to coax this woman away from using "patent medicines." I made an analysis of her stomach contents and soon convinced her that my way of thinking was correct, and she gave up the use of "patent medicines."

The Proper Lubricant and How to Use It In Urethral Instrumentation

DR. THOMAS M. PAUL, St. Joseph, Mo.: The plan which I pursue is as follows: Immerse a small granite-ware bowl for ten minutes in boiling water. Place this bowl on a small gas-stove and pour in a little over 200 c.c. boiling water. Add 6 gm. tragacanth, 46 gm. glycerin, 0.492 gm. mercuric oxycyanid and half a dram solution of cresol compound. Allow the whole to boil ten or fifteen minutes, constantly stirring with a previously sterilized glass rod or spatula. The stirring is essential to keep the tragacanth from settling to the bottom and burning. In the meantime, a glass-stoppered salt-mouth bottle can be immersed in the sterilizer. The lubricant can now be poured into the bottle and the latter stoppered. The compound cresol solution is added, not only as an antiseptic and preservative, but also on account of its anesthetic properties. If the mixture seems too thin, a little more tragacanth may be added; if too thick, a small quantity of glycerin and water.

As to urethral instrumentation: The best way is to lubricate the urethra instead of the instrument. To do this, an ounce glass syringe, with blunt urethral tip, is sterilized by boiling and filled with the lubricant. The air is expelled from it and the patient's urethra distended by injection. The excess of lubricant is allowed to flow out into absorbent cotton held over the meatus. By this method, the instrument passing into the urethra, advances on a surface well coated with the lubricant. The excess of the lubricant remaining in the urethra is pushed ahead of the instrument's tip and forced through the compressor urethræ into the posterior urethra. This method of lubricating the urethra instead of the instrument is especially desirable in cases of tight stricture and enlarged prostate or when the urethra has been lacerated from rough instrumentation or external violence.

The Fee-Splitting Evil

DR. DAVID A. MYERS, Lawton, Okla.: I try in every way to give the patient to understand that his physician's attention is as essential to the proper welfare and care of the case, except as to actual operation, as is my own. I ask the physician and the patient whether or not the physician came with the patient at the patient's request, and find out if the patient has been under treatment before coming. I then tell the patient or friends that the family physician is entitled to a fee for his absence from his business, on account of being in attendance on this case; that the fee I have established is $25 and expenses per day; then I see that the physician is paid that fee, and I am guided by the wishes of the physician as to whether I charge that fee in with my own, or whether he chooses to settle with the patient direct. In case the physician expressly requests that I shall make no charge for him, that he desires to collect his own fees for attendance on the case, and time and money spent in coming with the patient to see that the patient receives the proper surgical attention, I tell the patient that I am not including a fee for the family physician, but that whatever agreement he makes with the physician is distinct from any fee the patient may pay me. If a physician calls me by telephone, or sends me a patient, I take advantage of the first opportunity I have to thank him for his kindness, and in the meantime I try to do the best work I know how to do for his patient, and send him home to the family physician for after-care and attention. I consider that I owe no man a cent for the reference of a case, unless he spends time and takes the trouble to come with the patient at the patient's request.

DISCUSSION

DR. S. S. GLASSCOCK, Kansas City, Mo.: This is not a theory that confronts the medical profession; it is a condition, one of the most serious that the American physician has ever had to deal with, and in some form it is here to stay. Any idea that a discussion of this kind will in a short time eliminate fee-splitting is a mistake. It will not do it. I am opposed to fee-splitting. I am glad to defend the country physician, because the country practitioner in ability, in morals and from every point of view is the equal, if not the superior, of the city physician. The country physician should be paid for his services in referring a case to a surgeon, and I think the surgeon should insist on and have an understanding with the patient or the patient's friends that the physician should be given a respectable fee aside from the fee of the surgeon for doing the operation. That is the best solution of the problem.

DR. JABEZ N. JACKSON, Kansas City, Mo.: The time has come when the profession should take some action if it would keep its skirts clear. This subject is not simply a matter of secret conversation among physicians; the people are already becoming conversant with the fee-splitting evil. A great many of you have doubtless read the articles which have been published in *Pearson's* within the last year, discussing the fee-splitting evil among members of the profession to the utmost condemnation of the profession. We should try to arrive at some solution of the difficulty in order to preserve the integrity of the profession. I believe that in a great measure the faulty conditions as they exist lie with the specialist, for two reasons; the first is lack of consideration on the part of many specialists of the man who refers them work. The general practitioner feels that he has not been properly treated. Another indictment against the surgical profession is, and it has not been altogether the result of greed or avarice on the part of the family physician, that the practitioner has been solicited to do this thing. I will go further and say that he has been educated to believe in it. If I were to make one indictment stronger than another, it is that the proprietary medical schools of this country have been charnel-houses in the moral undoing of practitioners.

DR. JOHN F. BINNIE, Kansas City, Mo.: The family practitioner ought to receive a dignified fee for his services, such as for making the diagnosis and for his time and judgment. But there is another point of view. The family physician attended Mr. Brown when he had typhoid. He was in charge of this case for two or three weeks, charging perhaps $2 or $3 per visit, making two or three visits per day. In this way a considerable bill is obtained. Again, Mrs. Brown becomes pregnant, the doctor attends her and receives a good fee for it. Little Johnnie has diphtheria and another child the measles, so that year in and year out the family physician is receiving a considerable income from this family. It is his duty to give the best advice he can. Should he receive a big fee for referring a case in that family to a surgeon for operation? I do not think so. He owes it to the family and to the confidence that the family reposes in him to refer the case to the best surgeon that can be had.

Treatment of Extra-Uterine Pregnancy

DR. WALTER B. DORSETT, St. Louis: If I should be asked what are the "dont's" to be observed in the operation for extra-uterine pregnancy, I should mention them as follows: Don't delay until the patient is *in extremis* from loss of blood. Don't examine the patient by palpation or bimanually too frequently or too roughly, lest you disturb a blood-clot and cause renewed bleeding. Don't disturb the patient mentally. Don't operate in a residence, if it is possible to move her to a hospital. Don't administer a general anesthetic too abundantly, but in extreme cases resort to local hypodermic anesthesia. Don't waste time in opening the abdominal cavity and seizing the bleeding point, but as soon as the opening is made grasp the bleeding point with the fingers and slide down a clamp and secure it. In desperate cases leave the clamp on, close the wound around the clamp, and put the patient to bed. In such cases don't waste valuable time in searching for small blood-clots or a little fetus. Don't give hypodermic injections of strychnin that will whip up an already flagging heart, but rather start your proctoclysis or intravenous infusion of normal saline solution when you begin the operation. When once the bleeding vessel has been secured, 10-minim hypodermic injections of neutral camphor will most frequently be all that will be needed in the way of drug stimulation. When it is reasonable to surmise that no active hemorrhage is going on and the patient is in a fair condition, less hurry may be enjoined and a more careful toilet of the peritoneal cavity may be undertaken.

Don't use the vaginal route. If you have done so and have not had your patient bleed to death on the table, don't do it again or you will meet your Waterloo sooner or later. However clever you may be in your diagnostic ability, you cannot always locate the placental attachment, and when once an active hemorrhage is brought on, no matter how quickly you may open the abdomen to secure the bleeding vessel, your patient is liable to bleed to death on the table, or succumb a short time afterward. If the culdesac is to be opened for drainage, it can be done more safely and equally as well from above, particularly if you have used good judgment in having placed the patient in the Trendelenburg position.

DISCUSSION

DR. DAVID A. MYERS, Lawton, Okla.: The first case of extra-uterine pregnancy I had occurred in the wife of a physician. I examined her, kept her under observation, and thought she was having a miscarriage. I found a mass in the culdesac, and I thought it was a suitable case to open behind the uterus. Being inexperienced, I did that and about a week afterward I hurriedly opened the patient's abdomen and fortunately saved her life. She has since given birth to a child. A great many cases are not diagnosed.

DR. ST. CLOUD COOPER, Fort Smith, Ark.: I recall one case of extra-uterine pregnancy in which the patient was taken with pain similar to that of gall-stone colic. She had missed menstruation about three months. She had pain in the upper quadrant of the abdomen which simulated very much a gall-stone colic. In fact, we thought she had a gall-stone colic. There was no elevation of temperature. She presented no symptoms of shock. In the last attack, which was accompanied with severe pain, attention was drawn to the lower part of the abdomen. A mass was found on the right side and it was suspected that she was pregnant. A closer examination fully confirmed this diagnosis. The physician who called me decided to operate through the vagina against my judgment. The culdesac bulged considerably. I told him that if he was going to operate by the vagina, he had better be prepared to go in above as well. He made an incision in the culdesac, which was followed by such a large stream of blood that I thought the woman would die. An incision was then made in the abdomen, the bleeding vessel found and tied. A cyst and fetus were found. There had not been a rupture. The fetus was removed and drainage established through the cyst wall. The patient recovered.

DR. JOE BECTON, Greenville, Tex.: The operator is often called in these cases when it is too late, because the average practitioner in the country is loath to make a vaginal examination. Physicians who live in cities do not appreciate that. There are many practitioners who never make a vaginal examination, except during confinement. My first case of tubal pregnancy was diagnosed by a general practitioner; I operated, and the woman made a good recovery.

DR. HOWARD HILL, Kansas City, Mo.: Those cases of extra-uterine pregnancy which begin slowly and progress like an inflammatory condition are confusing. This spring I had a patient who went through a series of treatments. She was in the hospital three weeks. Four different physicians curetted the uterus, and still the patient was not well. She was in a bad physical condition, with a fluctuating mass behind the uterus. I made an incision and out came a fetus. The patient died of sepsis.

DR. A. L. BLESH, Oklahoma, Okla.: To illustrate the peculiar property of the Langhans cell, I will briefly cite a case. We know that the dividing line between the Langhans cell and syncytioma malignum has not been well defined and probably never will be. I operated on that diagnosis, but when I got in, I found that the Langhans cell or placenta, which had ruptured through the tube, had attached itself to the sigmoid. The fetus continued to grow. On one side of that structure we had nothing left but the mucous membrane in the sigmoid and on the other the serous covering of the fetal sac. I introduced a rectal tube into the rectum, attached the proximal end of the gut to the tube with a stitch and withdrew the tube, cut it off at the anal margin and stitched it to the anus. I telescoped the proximal portion of the intestine into the distal, but the distal extremity was so soft and so much like wet blotting-paper that I could not stitch around to make a secure union. So I buttressed it in front and behind with the sigmoid, and the patient made a good recovery.

I recall a case of ruptured tubal pregnancy that had gone on to term. The abdomen was opened, and a living child was extracted. The physician was much puzzled as to the conditions found at the time of the examination. He called me in to see the case and we diagnosed extra-uterine pregnancy at term, operated, made a rapid delivery, and the child lived two and a half years, and then died of pneumonia. We dealt with the sac by packing the membranes full of gauze and letting it slowly separate by granulation.

DR. W. B. DORSETT, St. Louis: I have made a diagnosis of extra-uterine pregnancy before rupture in one instance only, and I have operated in sixty-four of these cases. Women do not go to physicians to be examined at regular intervals, and they suffer a good deal before they submit to operation. This is particularly true in rural districts. The country physician and the general practitioner in the city do not make many vaginal examinations. I have done several of these operations without making a diagnosis of extra-uterine pregnancy before operating, but the indications of trouble were sufficient to warrant me in opening the abdomen and finding out the cause of the trouble.

Etiology and Pathology of Infections of the Biliary Tract

DR. C. C. NESSELRODE, Kansas City, Kan.: The intelligent treatment of cholelithiasis presupposes a clear conception of the pathology of the disease, of the means of treatment at our command and the objects obtainable by their use. To attempt by internal medication to dissolve a gall-stone that is insoluble; to cause the passage through the biliary ducts of a gall-stone when the ducts are impassable to a stone of its size; to attempt to cure supposed desperate symptoms by measures directed to the stomach when the cause of the symptoms is adhesions about the gall-bladder or a condition within the biliary tract—these measures are as futile as they are irrational.

DISCUSSION

DR. JABEZ N. JACKSON, Kansas City, Mo.: All these cases of gall-stones are infections to begin with, and infections that come through the radicles of the portal vein, but not so often through systemic infection of the hepatic artery. It is a strange coincidence that surgeons have operated for appendicitis and found gall-stones also, in which case they may have made a diagnosis of both appendicitis and gall-stones and found both, and there are many other instances in which we

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have had humiliating experiences. Twice I have made a diagnosis of appendicitis and removed the diseased appendix, and two or three days after the operation the patient has had a typical gall-stone attack.

DR. A. L. BLESH, Oklahoma, Okla.: Every surgeon who has had considerable experience has found in the abdomen the frequent association of appendicitis with gall-tract infection, and ulcer of the stomach or duodenum. This association is too frequent to be accidental, and it is almost culpable to remove the appendix in the absence of suppuration, and not to explore these other points at the same time.

DR. JOHN F. BINNIE, Kansas City, Mo.: I fully believe that the majority of cases of gall-bladder disease, of which gallstones are an accident, and ulcer of the stomach are due to the same thing, absorption of a non-accustomed quantity of poisonous material from the sewage system of the body—that is, through the portal circulation. Postoperative hemorrhages seem to be due to a reverse embolism of the gastric vein. These hemorrhages are from lesions of the mucosa of the stomach which recover very promptly just as promptly as acute ulcer of the stomach recovers if it does not kill the patient in the meantime.

DR. HOWARD HILL, Kansas City, Mo.: I wish to call attention to one anatomic fact; in certain cases we will find a distended gall-bladder with stasis, with absolutely no obstruction in the biliary tract, and bile will flow through in an hour or so. I have come to the conclusion that there is an abnormal disposition of the peritoneal fold which surrounds the so-called pelvis, and whenever the gall-bladder becomes distended beyond a certain point, it compresses the cystic duct, and the gall-bladder is distended by its own secretion.

Treatment of Compound Fractures

DR. CHARLES H. BLICKENSDERFER, Shawnee, Okla.: The successful treatment of compound fractures depends on three principles, asepsis, drainage and proper fixation or immobilization. The nature of these injuries is such that there is more or less destruction and laceration of the soft parts, and more or less extensive fragmentation and comminution of bone. The vascular supply is interfered with on account of laceration or tearing of blood-vessels, resulting in a large outpouring of blood and exuded serum. These wounds are therefore highly susceptible to infection. Primary drainage is required in these cases, supplemented by efficient counterdrains as soon as indicated. The resort to secondary drainage is many times imperatively demanded, and must be ample for the reason that infection, which is now established, presents a condition urgently requiring relief by the immediate and complete removal of all infectious matter and secretions resulting from bacterial activity and tissue destruction. Secondary drainage is quite often an indication that primary drainage was incomplete or insufficient, and if a wound of this character is to be drained at all, it should be done at the first dressing and provision made for free and extensive drainage. I think that compound fractures should receive early and free drainage. Operative interference here, as in simple fractures, should be deferred for a week or longer until asepsis is assured and the bones are in the most active state of repair. Exceptions to this rule are to be found in instances when displacement and deformity are great and reduction otherwise impossible.

The Value of Tuberculin in Diagnosis

DR. L. G. MOORMAN, Oklahoma, Okla.: A failure to react to tuberculin may mean: 1. The patient is not tuberculous. In this case the tuberculin remains inert regardless of the size of the dose employed. This is the explanation in the great majority of negative cases. 2. The patient may have an established tolerance through chronic autotoxic tuberculosis or through tuberculin treatment. In this case a sufficient increase in the dose will overcome the tolerance and give rise to a reaction. 3. The tissues are no longer sensitive to tuberculin on account of the failure to produce antibodies, and no reaction results even when large doses are given. This is often the case in advanced tuberculosis.

After a careful study of the case history and a thorough physical examination, the cutaneous test should be employed with a view to confirming further any conclusions arrived at from symptoms and physical findings, or any suspicion aroused by history or general appearance which could not be confirmed by physical examination. In the first instance, a positive reaction further substantiates the diagnosis. In the second instance, a positive reaction calls for further observation and repeated examinations and possibly a subcutaneous test with a view to obtaining a local reaction. The subcutaneous test should also be employed in suspicious cases in which the cutaneous test is negative. The examination of the sputum and the use of the Roentgen-ray often aid in the diagnosis. The tuberculin reaction, so employed, is of great service in diagnosis and is extensively used in this way in most of the great clinics in this country and abroad.

Abortion

DR. H. O. LEONARD, Kansas City, Mo.: Abortion produced at any time for any other purpose other than to save the life of the mother or fetus is a crime. Every wife or mother who produces or submits to the production of unjustifiable abortion is a criminal and is guilty of murder. Every man who advises, assists or aids in any way in the performance of it is a murderer and is branded in his own heart as a criminal. Not all medical men are abortionists, but our attitude, our indifference, our failure to unite in a systematic effort to agitate and enlighten and solve it is at least indicative of indifference. I would have every abortion reported as a matter of law and the causes discovered. If it lies with the medical man or with the mother or father, imprisonment should be meted out. It is the duty of the leaders, if there be a conservation of life, to teach men what they ought to be taught, that sexual indulgence, when it is not for the divine purpose of creating a new life, is a direct cause of abortion. Self-control lies at the foundation of all civilization and all success, all true pleasure and happiness. Without these, we are as a race of weaklings physically, mentally and morally. We should teach men and women that the rearing of children is honorable and more worth while than the acquisition of money, and that abortion is criminal and punishable.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

Twenty-First Annual Meeting, held in Baltimore, Oct. 1-5, 1912

The President, SURGEON CHARLES P. WERTENBAKER, U. S. P. H. Service, in the Chair.

The meeting of the association was well attended and delegates were present from many foreign countries. The result of the election of officers was given in THE JOURNAL, October 5, p. 1303.

President's Address: The Sanitary Awakening of a Nation

CHARLES P. WERTENBAKER, U. S. P. H. Service: The development of the sanitary awakening of the nation is to be accomplished by the following aims: broader and more general education in health matters, and a more thorough understanding of their relations to the daily life of the individual, so that proper measures for the preservation of health may be appreciated; closer relation between the health agencies of the state and the nation and with the people, so that the enforcement of sanitary laws and regulations may receive popular support; the scientific training of health officers and the establishment of a standard to be reached as a prerequisite to holding the position of health officer; more extended and thorough instruction in sanitary science and public health work in our medical schools and the establishment of a course leading to the degree of Doctor of Public Health; instruction in sanitation and the preservation of health in our public schools, commencing with the kindergarten classes and carried through every grade of the public school course; cooperation of great business enterprises in health work, and the development and practical application of rural sanitation.

The key to the situation is education, both for the layman and for the medical profession. The possession of a medical degree does not make a sanitarian. It is merely the founda-

tion on which to build special instruction and training. A number of the leading medical colleges have now established courses in preventive medicine. What is most needed is a postgraduate school where a health officer may receive the latest information and learn the modern methods of dealing with sanitary problems in a relatively short time. The establishment of a school of sanitary science in connection with the Hygienic Laboratory of the Public Health Service would be a great benefit.

One of the most promising fields for public health work is the cooperation of great commercial organizations with health authorities for improvement in sanitary conditions. It means the conservation of the health of employees. A number of the great insurance companies are now interesting themselves in the health conditions of their policy-holders. The question of the care, preparation and service of food in public eating places is receiving attention and regular inspections are made in several states. There is considerable danger of the spread of typhoid fever, tuberculosis and other diseases through cooks, waiters and others handling foods who are infected with these diseases. A systematic inspection of these persons to eliminate disease carriers is most desirable and will be established when the public demands it. The time will come when the public in general will refuse to patronize any eating-place that does not display a certificate from the health department showing that the place has recently been inspected and found in good sanitary condition, the food wholesome and prepared and served in a proper manner.

Alcohol a Menace to the Army

COLONEL LOUIS MERVIN MAUS, M. C., U. S. Army, presented statistics demonstrating that alcoholic stimulants have no place in the Army. Alcohol, he believes, lessens working capacity, marching endurance, accuracy and rapidity in rifle firing, and lessens the ability to command troops and solve military problems, to navigate and maneuver war vessels, to act on courts-martial and military boards, and properly to perform administrative work. It causes sickness, impairs health and usefulness, adds greatly to the non-efficiency of both officers and men, adds additional burden and cost to the medical department, deprives the government of otherwise valuable officers and enlisted men and forces them on the retired or pension list, with corresponding increase of governmental expenditures. Practically all of the crimes in the Army can be directly traced to the use of alcohol. The majority of degenerates who enter the Army, deserters, the inapt, moral perverts and venereal debauches are victims of alcoholic beverages or their hereditary effects and the sick-rate of the Army would be reduced 50 per cent. and its efficiency correspondingly increased should the enlistment of men of this class and the use of alcoholic drinks be interdicted. In view of its temporary and permanent disabling and disqualifying effects the government should prohibit the use of alcoholic drinks among officers of the military and naval forces and officials and employees of the civil service.

The Master-Key in Sanitation

ASSISTANT SURGEON-GENERAL WILLIAM COLBY RUCKER, U. S. P. H. Service, detailed the evolution of the public health edifice from the days the foundations were laid, through the dark ages, to the present, when there is a great awakening. In the middle ages there was a condition of promiscuity. Cleanliness, fresh air in dwellings and sewage-disposal were unknown. The people herded together, dipped in the same dish, and took no sanitary precautions whatever. Then disease ran riot. The ravages of plague, syphilis and cholera are matters of history. The master-key which will open every door which guards the secret of the prevention of the spread of diseases is non-promiscuity. He cited as manifestations of new conditions the abolition of the common roller-towel and the public drinking-cup; the campaign for the eradication of hookworm, and the extermination of rats, lice and ground-squirrels. Quarantine, isolation and examination of immigrants are measures of non-promiscuity. We should endeavor to create in the persons committed to our care a sanitary conscience, that is, the incarnate spirit of non-promiscuity.

Graduated Labor in Tuberculosis

SURGEON R. C. HOLCOMB, U. S. Navy: Work in the open air and the beneficial effects of the outdoor life in the treatment of tuberculosis have been practiced at the U. S. Naval Hospital, Las Animas, Colo., since March of this year, and have already proved a valuable aid in sanatorium treatment. The graded work at Las Animas commences with walking from half a mile to ten miles a day, and work about the institution. The patient is given a card and as he advances in grade his labor is changed in conformity. By this means the treatment is of economic value to the institution and to the patient. The patient leaves the institution trained and fitted for work.

Disinfection of Equipment in the Field

MAJOR EDWARD L. MUNSON, M. C., U. S. Army, presented an original method, and an original apparatus weighing less than 5 pounds by which disinfection of the equipment of the soldier in the field may be accomplished by gaseous means within twenty minutes; the destruction of insects, vermin and parasites is accomplished with this apparatus in half the time that has heretofore been necessary with gas. Formaldehyd gas was selected. The requirements for the ideal generator for gaseous disinfection are as follows: use of a germicidal gas which can be handled without danger to the operator; compactness, portability and little weight; strength, with little liability to injury; few parts, with simplicity of operation and cleansing; freedom from danger of fire or scorching; freedom from danger of explosives, or the blowing-over of substances harmful to fabrics; ability to be used inside or outside a disinfecting container, whatever its size; sufficient generating capacity for the work at hand; delivery of gas under control of the operator, and short time-factor for developing the gas and accomplishing disinfection. The general requirements for an ideal disinfecting container are portability, compactness and little weight; sufficient strength and sufficient impermeability to the gas used for the work in hand; simplicity of use; possibility of improvising or procuring the necessary materials without difficulty in the field, and of utilizing them without delay; ability to be used with a gas generator operated either within or without such container; sufficient size for the work in hand; cheapness and ability to reduce to the minimum the amount of residual air otherwise diluting the disinfectant gas, with the purpose, but not on the same principle as the vacuum-chamber.

Determination of Potability of Water

CAPTAIN ROBERT S. MCCAUGHEY, M. C., Ill. N. G., referred to the appalling amount of water-borne diseases and the ignorance of the average officer of the medical corps of the National Guard as to methods of determining the purity of water and interpretating the results. Correct judgment can be formed only after chemical, physical and bacteriologic examination. After describing the tabloid method of Tresch of England and the ampule method of Fromont of France, he gave in some detail the technic of the examination of water to determine its potability, and formulated a modification which requires in its entirety from one to two hours and which will enable the sanitary officer properly to protect the health of those entrusted to his care.

Far-Reaching Effects of Camp Epidemics

MAJOR EDWARD L. MUNSON, M. C., U. S. Army, in an exhaustive and carefully prepared paper on "The Influence of Camp Epidemics on the Geographical Expansion, Political History and Military Policy of the United States," showed how, by camp epidemics, the ultimate outcome of a resort to arms had been frequently influenced and how the destinies of nations had thereby been changed. Beginning with the dawn of history, he sketched epidemics in war and their far-reaching results. In this country the Quebec expedition is a notable example, as, had not the expedition been crippled and delayed by disease, the Dominion of Canada would undoubtedly now be a part of the United States. In the light of subsequent history the political, geographic and material development of nations have hinged on camp epidemics of preventable dis-

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eases, which brought military movements of vast ultimate significance from avenues of success to complete disaster. Camp epidemics are not merely occurrences lamentable from the humanitarian point of view; they are often epochal crises in the fate of armies and the destinies of nations.

(To be continued)

PENNSYLVANIA STATE MEDICAL SOCIETY

Sixty-Second Annual Meeting, held in Scranton, Sept. 23-26, 1912

(Continued from page 1480)

Physiology of the Heart

DR. C. C. GUTHRIE, Pittsburgh: The fundamental mechanism of the rhythmicity of the heart is not clearly understood. At present it is not possible to say whether the tissue of the bundle of His is muscular or nervous as the only definite investigations have been histologic and the tissue is of a peculiar structure. To gain information, members of my staff have made investigations to determine if the tissue is contractile, but as yet the results are not conclusive. Cardiac arhythmia associated with gastric disorders is frequently confused clinically with Stokes-Adams disease. Such irregularities quickly disappear under the influence of atropin, which temporarily impairs the inhibiting mechanism by acting on the terminal nerve filaments in the heart muscle.

Auricular Fibrillation

DR. JAMES E. TALLEY, Philadelphia: The polygraph and electrocardiograph have demonstrated that this condition is a distinct clinical entity in man. Fortunately, now a pretty certain diagnosis is possible without these instruments of precision, except in fibrillating patients with slow heart-beat. The pulse-rate is the best guide to digitalis administration. A patient with auricular fibrillation whose pulse-rate is about 80, and who has dyspnea only on unusual exertion, needs directions concerning his mode of life, but no digitalis yet. With a pulse-rate of 100 at rest, he should take digitalis, minims x-xv t. i. d. until his pulse-rate is reduced to 70 or the physiologic limit is reached. With a pulse of 150 or above he needs strophanthin, gr. 1/250, intravenously, every two hours, and at the same time by mouth, digitalis, minims xx-xxx, four times daily, until the pulse-rate slows up.

Infectious Febrile Heart

DR. GEORGE W. NORRIS, Philadelphia: Infections may affect the heart as (1) gross lesions, (2) microscopic lesions, (3) chemical changes. Any one of the five physiologic attributes of the heart muscle may be involved separately or in combination, producing various forms of arhythmia. Fever is simply an index of reaction to infection, and may or may not indicate direct treatment. Therapeusis is divided into general and special methods, of which the former is by far the more important, and includes fresh air, enteroclysis, sleep, attention to diet and elimination, cold sponging and, when possible, specific medication. Direct treatment is far less important, and reliance is to be placed chiefly on strychnin, caffein and camphor.

Digitalis

DR. M. HOWARD FUSSELL, Philadelphia: The preparations of this drug are the most useful and, sometimes, the least to be depended on of any set of drugs in the Pharmacopeia. Tincture of digitalis should be not more than one year old and should be tested physiologically. If this is used as a fat-free tincture, it may be used hypodermically without the slightest fear of abscess, without an extreme amount of pain, and certainly with good effect. The infusion of digitalis must always be made from fresh leaves which are assayed and physiologically tested. When so used it is the best form of digitalis when a diuretic action plus the action on the heart muscle is desired. The great indication for the use of digitalis is cardiac insufficiency. Yet all attacks of cardiac insufficiency are not helped by the administration of digitalis; indeed, in some such cases its use is contra-indicated. In cases of cardiac dilatation, whether the failure of the left heart is due to valvular disease or to a primary myocarditis, digitalis should not be given when the case is first seen. The only safe procedure is to put the patient to bed for at least twenty-four hours and feel one's way with digitalis. A most improper use of digitalis is in cases of broken compensation of slight degree while the patient is on his feet.

DISCUSSION

DR. H. A. HARE, Philadelphia: One cannot see a heart which has undergone myocardial degeneration without marvelling that, if the myocardial theory is correct, the heart has beat as long as it has. The work with the polygraph has to be continued for a considerable time before anything like reliable results can be obtained by the practitioner. The important point to remember under the newer conception of the mechanism of the heart-beat is that every cardiac impulse arises from a small bundle of embryonal tissue where the great veins join the auricle. From this an impulse is radiated which goes to the auriculo-ventricular bundle, passes over the bundle of His and to the walls of the ventricles, going to the left and the right. Give digitalis to one who has a failing heart and there is great improvement; to another, and there is no improvement. Why? The moment you consider the myogenic theory of contraction, you recognize that in the first man the chief lesion was valvular; in the second, myocardial. Also in the second man there may have been a small lesion in the bundle of His, which has been more effective in combating treatment than a larger lesion in another part not so important. In pneumonia you may give digitalis with brilliant results, and you may have a mortality rate that is alarming. In the second class of cases the myocardium has been so affected that digitalis cannot have the same effect as in the first instance. If you know your pathology you will not have your views upset.

DR. JAMES M. ANDERS, Philadelphia: At one period in the embryonal state the heart movements are seen to occur without the presence of any discoverable nerve cells. Unquestionably we must turn to the myogenic theory to explain the principal rôle in the rhythmicity of the heart action. We must recognize such functions of the cardiac muscles as excitability, stimulus production, contractility and tonicity, but it is more important to recognize the fact taught by MacKenzie and others that not all the heart muscles are equally endowed with these various functions. The aim of the clinician should be to correlate the symptomatology of a given case with the condition of the different functions of the cardiac muscle. I quite agree that auricular fibrillation is a distinct clinical entity. According to my personal experience it must be a very common one. The most frequent cause is mitral disease, particularly mitral stenosis. As to prognosis, I believe that when a patient is willing not to put forth any unusual exertion, we may give a guardedly favorable prognosis in the majority of the cases. Cases due to rheumatism are most benefited by the free use of digitalis. In the febrile heart, the usual cardiac stimulants are much abused in the attempt to strengthen the circulation. It is better to attempt to maintain the arterial tension by equalizing the circulation, than to overstimulate a degenerated myocardium. A most useful measure in maintaining the peripheral circulation is friction of the extremities plus the application of heat. I have seen two patients with Stokes-Adams disease, most probably of the functional variety, recover under the use of atropin and other measures. Here digitalis in small doses appeared to act beneficially contrary to what we have noticed in cases due to organic change in the bundle of His.

DR. JAS. E. TALLEY, Philadelphia: In cases of fibrillation, with the pulse running from 150 to 200, digitalis is too slow. Twenty to thirty minims three to four times a day should be given here, but first of all the patients should have strophanthin, 1/250 gr., intravenously every two hours, until the pulse-rate is lowered.

DR. G. W. NORRIS, Philadelphia: Practically, digitalis will not raise blood-pressure in any case. Exceptional instances, with an elevation of up to 10 mm. may be met with. We need not, therefore, be afraid to give this drug in cases of aneurysm, for example, on account of any danger of increasing arterial

tension. I have found that to improve vasomotor tension hot mustard foot baths, at intervals of two, three or four hours, are valuable; a marked improvement is shown both in mental symptoms and in the peripheral circulation.

DR. H. A. HARE, Philadelphia: In giving digitalis in the case in which circulatory failure is such that the patient seems near to death, 20 drops of digitalis every two, four or six hours, until you bring him to somewhere near the normal point, may be given. But after you have so brought him up, cut the dose down, and hold him where he is.

Medical Expert Testimony From the Legal Standpoint

FRANCIS FISHER KANE, ESQ., Philadelphia: Expert testimony includes deductions and opinions, a distinction that the courts frequently overlook. What we demand is the real opinion of the expert not affected by advantageous considerations which the present system has thrown around him. There are expert medical advisers and expert medical witnesses, and this distinction the public does not appreciate. The fault lies in the system of expert testimony. The great majority of physicians are honorable and try to be honorable while testifying. To insure testimony without bias the expert should also appoint all experts.

Medical Expert Testimony From the Medical Standpoint

DR. FRANCIS X. DERCUM, Philadelphia: Essentially the position of an expert is that of a witness who draws inferences from facts presented. Occasionally, an expert acquires subconsciously a personal bias which may lead to his mistaking altogether the nature of his function. His function does not consist in his trying the case. The expert should promptly present the scientific facts and his opinion to the counsel, who should be in possession of the unfavorable as well as the favorable facts in the case. While the expert may not testify to subjective symptoms, he may, after a full presentation of the physical facts, add that he has received a statement of subjective symptoms consonant with the symptoms observed by himself. Technical terms cannot be insisted on too strongly as objectionable. Conference should be had with counsel in the preparation of hypothetical questions. During cross examination, the witness should be as frank and open as under the questioning of the direct examination. There is a gross misconception and often improper comment by the public and lay press regarding differences of opinion shown by experts. These differences of opinion are not as to the actual findings but as to their interpretation. In every department of knowledge similar differences of opinion are developed.

DR. GEORGE C. JOHNSTON, Pittsburgh: In contradistinction to the all too prevalent ridicule accorded the medical expert witness, I would call attention to the respect with which courts look on the testimony of the chemist and microscopist. Yet, those of us who know realize that there is very little more confidence to be put in that kind of testimony than any other. When the ordinary physician testifies for the first few times, he feels that it is quite an honor to be called, and he testifies freely—until the cross-examination is begun. He then wishes he had testified one-fortieth as much. The fact should be emphasized that the medical man in court unconsciously appears for the attorney whom he knows. He should remember that while he may be paid by the counsel who called him, he is there as an officer of the court whose function it is to educate the court along a particular line. All a man has to do is to testify to those things he knows to be true, and when he makes a statement of personal opinion he should preface it with "In my opinion." It would be better to have the expert witnesses selected by the court and not by the counsel.

The Pituitary Body in Disease and the Results of Surgical Intervention

DR. CHARLES H. FRAZIER, Philadelphia: The operation which I have found appropriate for the exposure of the pituitary consists essentially in the reflection of an osteoplastic flap from the right frontal region, in the removal *en bloc* of the supra-orbital ridge with a portion of the roof of the orbit, and in the rongeuring of what remains of the orbital roof down to the optic foramen. When this point is reached, we are within striking distance of the sella turcica, and by making a centimeter incision, parallel with and a little above the base of the skull, the optic tract and commissure is exposed and, immediately behind them, the pituitary gland. In certain cases, I believe this method will be the operation of choice and will be preferred to the transphenoidal route, which has so often been followed by fatal attacks of meningitis.

DISCUSSION

DR. WILLIAM CAMPBELL POSEY, Philadelphia: Ophthalmologists are usually able to recognize diseases of the pituitary region, but we do not yet feel that we are always able to advise means to relieve the conditions. We have not as yet full confidence in operative procedures. It is my belief that Dr. Frazier's method of exposing the pituitary body is the least dangerous and the simplest of all the methods tried.

DR. WENDELL REBER, Philadelphia: I have knowledge of one case in which there were well marked focal symptoms with complete bitemporal hemianopsia. Operation was absolutely declined and the man was placed on pituitary body extract and thyroid. He recovered full visual fields in both eyes. The results of surgery are brilliant, and if the focal symptoms do not show prompt improvement on resort to organotherapy operation is, of course, indicated.

The Medical Profession, Public Opinion and Animal Experimentation

DR. OSKAR KLOTZ, Pittsburgh: We in the medical profession must come to a closer understanding with the public. Instead of allowing only rumors of our work to filter through to the public, there should be a careful exposition of our findings portrayed in language understood by all. The best medicine is written in words of two syllables. On the other hand, the public is ill-advised to attempt democratic rule and regulation of matters vital to the progress of medicine. This has been the attitude of some who, I fear, fall into the category of the "uninformed." I hold no brief for the carrying on of promiscuous animal experimentation in any science. It is evident, however, that progress can be obtained only by demonstration of truth and the truth of living tissue lies in those tissues themselves.

DISCUSSION

DR. J. E. SWEET, Philadelphia: The whole of the great development of medicine can be traced to the four postulates laid down by Robert Koch. Two of these fundamental requirements demand an animal experiment, and there is no other way. Without these experiments, bacteriology would have become merely a branch of botany and not the corner stone of modern medicine. Laboratory men are here to plead for the cause of animal experimentation because of criticism on the part of the public and of the medical profession. The former is due to a lack of knowledge; the latter to thoughtlessness. There are destroyed yearly in the public pounds in Pennsylvania twenty-five to thirty thousand dogs for no other purpose than to get rid of them. In view of this useless destruction of material I hold that any teacher of physiology or pharmacology, who believes that he can teach his students by the use of these animals, is entitled to his belief without criticism. To the criticism that much of animal experimentation is foolish, I would reply that he who at the autopsy table has not discovered his line of reasoning regarding diagnosis and treatment to have been foolish must have been either peculiarly fortunate or extremely young.

DR. JAMES D. HEARD, Pittsburgh: We must as individual physicians be awake to the danger of the present situation regarding the continuance of animal experimentation. It should be known that the majority of animals which ought to be available for medical research never reach the laboratory but are merely killed without having served any useful purpose. Every physician should actively engage in a campaign of public education. He must therefore inform himself of the conditions and of the probability that future bills will be introduced further hampering scientific work. We should use our influence with our own clientele and with legislators in the interest of bills favored by our profession.

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Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, November 12. Sec., Dr. F. T. Murphy, Brinkley; Homeopathic, Little Rock, November 12. Sec., Dr. P. C. Williams, Texarkana; Eclectic, Marion Hotel, Little Rock, November 12. Sec., Dr. C. E. Laws, Fort Smith.

CONNECTICUT: Regular, City Hall, New Haven, November 12. Sec., Dr. Charles A. Tuttle, 196 York Street; Homeopathic, Grace Hospital, New Haven, November 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Avenue; Eclectic, New Haven, November 12. Sec., Dr. T. S. Hodge, 19 Main Street, Torrington.

FLORIDA: Regular, Jacksonville, November 11-12. Sec., Dr. J. D. Fernandez.

LOUISIANA: Regular, Tulane University, New Orleans, November 4-6. Sec., Dr. A. B. Brown, 108 Baronne Street; Homeopathic, New Orleans, November 4. Sec., Dr. Edward Harper, 702 Macheca Bldg.

MAINE: City Council Rooms, Portland, November 12-13. Sec., Dr. Frank W. Searle, 776 Congress Street.

MASSACHUSETTS: State House, Boston, November 12-14. Sec., Dr. Edwin B. Harvey, Room 159, State House.

NEBRASKA: State House, Lincoln, November 13-14. Sec., Dr. C. P. Fall, Beatrice.

NEVADA: Carson City, November 4. Sec., Dr. S. L. Lee.

TEXAS: Dallas, November 13-14. Sec., Dr. J. D. Mitchell, Wheat Bldg., Fort Worth.

WEST VIRGINIA: Wheeling, November 11-13. Sec., Dr. H. S. Barbee, Point Pleasant.

Cotner Convicted in the Supreme Court

J. W. Cotner of Lebanon, Kan., a "suggestive therapeutist" and "magnetic healer," was arrested on complaint of Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, in December, 1911, and was convicted on seven counts in the District Court of Smith County. Cotner appealed to the Supreme Court and the decision of the lower court was affirmed. In rendering the decision, the Supreme Court said:

"The act of this state relating to medical registration and examination is one of a series devoted to the conservation of public health. The state is especially interested in the protection of sick people from empiricism and from charlatanry; from the quack who is ignorant of healing and the faker who is an adept at swindling. Consequently, the legislature has provided that any one proposing to practice medicine must apply to the State Board of Medical Registration and Examination for leave, prove his qualifications, obtain a certificate of authority, and register it in the county of his residence, before assuming the duties and exercising the privileges of a physician. Should he undertake to practice without a certificate, he is guilty of a crime and liable to punishment.

"The subject is of such moment and gravity, and the legislature has dealt with it so carefully and so seriously that a plea that the taking out of a certificate had been inadvertently overlooked would be an affront. Unless he be of weak mind, whoever ignores the statute does so wilfully and without any reason to expect acquiescence or toleration on the part of the authorities. Enforcement of the law is not left to private initiative or prompting of mercenary motives. That duty is expressly enjoined on the secretary of the board of registration and examination and all other law officers may be expected to cooperate, as in other cases of infractions of the criminal law. A prosecution is not a mere admonition to take out a certificate or else to desist from practice. Its purpose is punishment.

"The life, health and financial resources of individual men, women and children were to be protected from ignorance and imposture. Each repetition is a new peril and instead of applying to a certain course of conduct, the statute specifies and condemns each impulse to the very end that it may not unite with others in swelling a common stream of action. The judgment of the District Court is affirmed."

Cotner has jumped his bond and has gone to Texas, where the state board should look after him. Secretary Dykes has rid Kansas of almost every faker including the so-called "chiropractors," "suggestive therapeutists" and "magnetic healers," and each of these systems has been brought under the jurisdiction of the State Board of Medical Registration and Examination by the Kansas Supreme Court within the past year.

Utah July Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, July 5, 1912. The number of subjects examined in was 22; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 9, of whom 8 passed including 2 osteopaths. For one candidate the grades were withheld pending the presentation of credentials. One candidate was licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1911)	79.1
Rush Medical College	(1912)	80.2, 82.1, 82.1
College of Physicians and Surgeons, Baltimore	(1912)	82.1
Medico-Chirurgical College, Philadelphia	(1911)	81.7

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Keokuk Medical College, Coll. of Phys. and Surg.	(1908)	Iowa

Colorado October Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written and oral examination held at Denver, Oct. 1, 1912. The number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 3 of whom 1 passed and 2 failed, both of whom were osteopaths. Twenty-two candidates were licensed on presentation of satisfactory credentials including state licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Harvard Medical School	(1912)	87

LICENSED ON PRESENTATION OF SATISFACTORY CREDENTIALS

College	Year Grad.	State Licenses
Columbian College, Washington, D. C.	(1896)	Ohio
George Washington University	(1910)	Dist. Colum.
College of Physicians and Surgeons, Chicago	(1907)	Illinois
Northwestern Univ. Medical School.	(1905) Iowa; (1905)	Oklahoma
Illinois Medical College	(1907)	Illinois
Keokuk Medical College, College of Physicians and Surgeons	(1906) Iowa; (1907)	Iowa
Johns Hopkins University	(1909)	Indiana
Univ. of Michigan, College of Medicine.	(1895) (1912, 2)	Michigan
Washington University, St. Louis	(1901)	Missouri
St. Louis University	(1905) (1909) Missouri; (1910)	Oklahoma
Barnes Medical College	(1907)	Illinois
University of Nebraska	(1908)	Nebraska
Eclectic Medical Institute, Cincinnati	(1888)	Texas
University of Pennsylvania	(1887)	Penna.
Vanderbilt University	(1901)	Tennessee
University of Vermont	(1908)	Vermont

Wyoming July Report

Dr. A. B. Tonkin, secretary of the Wyoming State Board of Medical Examiners, reports the written and oral examination held at Cheyenne, July 12-14, 1912. The total number of subjects examined in was 13, total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 5 all of whom passed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1890)*	91.6
Chicago College of Medicine and Surgery	(1909)	75
Washington University, St. Louis	(1911)	91.5
Ohio Medical University	(1898)*	87.7
Milwaukee Medical College	(1911)†	75

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Colorado	(1911)	Colorado
College of Physicians and Surgeons, Chicago	(1906)	Illinois
Washington University, St. Louis	(1906)	Illinois
University Medical College, Kansas City	(1908)	Kansas
Memphis Hospital Medical College	(1903)	Tennessee
University of the South	(1905)	Nebraska

* Licensed previously, under the old law, on presentation of a diploma. † Supplementary examination.

The following questions were asked:

ANATOMY

1. Locate and briefly describe the gall-bladder. 2. Describe the formation of the teeth. 3. Name the abdominal muscles. Describe any one of these muscles. 4. Into what two great classes are mus-

cles divided? Give a macroscopic and a microscopic description of each. 5. Describe and give the anatomic relations of the appendix vermiformis. 6. Indicate the collateral circulation if the femoral artery were obstructed at the apex of Scarpa's triangle. 7. What are the vesiculæ seminales? 8. What structures are severed in tracheotomy? 9. Describe the male urethra and name its divisions. 10. Give the distribution of the pneumogastric nerve.

GYNECOLOGY

1. Mention the pathogenic bacteria that invade the vagina and state how the vagina is normally protected from them. 2. Describe the difference between the virgin uterus and that of the multipara. 3. What are the conditions liable to produce sepsis after abortion? 4. Differentiate ovarian cyst, uterine fibroid and pregnancy at the fifth month. 5. Describe the genupectoral posture and mention some of its important uses. 6. What is the management of carcinoma of the cervix with reference to pregnancy and labor? 7. Differentiate vaginitis and vaginismus and mention treatment of each. 8. What are the essential causes of sterility in the female? What may be done to promote fertility? 9. Mention the causes and state the management of cystitis in the female. 10. What are the dangers to the female from latent gonorrhea? How should the resultant infection be treated?

PHYSICAL DIAGNOSIS

1. What cardiac lesions are likely to accompany or follow acute articular rheumatism? How are they recognized? 2. What is the diagnostic significance of dropsy? 3. In what conditions does bronchial breathing take the place of vesicular breathing? 4. What are the physical signs in the first stage of lobar pneumonia? 5. State where topographically mitral and tricuspid murmurs are most distinctly heard. 6. In what diseases may blood be expectorated? 7. How may pleuritic friction sounds be distinguished from râles occurring in the bronchial tubes? 8. Enumerate the diagnostic sounds in a diseased respiratory apparatus. 9. What are the physical signs of aortic regurgitation? 10. Differentiate catarrhal from croupous pneumonia.

CHEMISTRY AND TOXICOLOGY

1. What are the characteristic properties of solids; of liquids? 2. What is meant by weight; by specific gravity? 3. Define capillary attraction, absorption and diffusion. 4. Give an explanation of chemical symbols and formulæ. 5. Explain atom, molecule, elementary substance and compound substance. 6. What are acids, neutral substances and salts? 7. Write about iodin. Occurrence in nature, symbol, atomic weight, description and use in medicine. 8. Give symptoms, fatal dose, fatal period and treatment of morphin poisoning. 9. Give symptoms, fatal dose, fatal period and treatment of oxalic acid poisoning; of concentrated lye poisoning. 10. Give test for sugar in urine. Give test for albumin in urine.

OBSTETRICS

1. Give short anatomic description of uterus. 2. What is meant by (a) puberty; (b) ovulation; (c) menstruation; (d) conception; (e) menopause? 3. Describe fully a fetus at term. 4. Classify subjective and objective signs of pregnancy. 5. Write your management of a normal case of labor with respect to mother and child. 6. Describe the use and application of forceps. 7. Give diagnosis, prognosis and treatment of puerperal fever. 8. Outline artificial feeding for the first year for child. 9. What is eclampsia? Give prognosis and treatment. 10. Write what you consider an important question and give its answer.

PRACTICE OF MEDICINE

1. Give symptoms, etiology, prognosis and treatment of typhoid fever. Discuss this subject fully. 2. Discuss tetanus. 3. Give etiology, symptoms and four principal varieties of myalgia with treatment. 4. Define (a) Addison's disease; (b) cretinism; (c) diabetes insipidus; (d) epistaxis; (e) chlorosis; (f) Pott's disease; (g) vaccination; (h) inoculation. 5. Write about general constipation: its cause, effects, treatment and in what class of persons is it most prevalent? 6. Describe a case of eczema. Give prognosis and treatment, local and constitutional. 7. What is psoriasis? Furuncle? Erysipelas? Favus? 8. Give etiology, symptoms and treatment of acute myelitis. 9. Outline case of paralysis agitans and mention treatment. 10. What is idiocy? Hysteria? Epilepsy?

SURGERY

1. Classify ileus and give symptoms, diagnosis and treatment of same. 2. Give symptoms, diagnosis and treatment of fracture of neck of femur. 3. Describe (a) complete indirect inguinal hernia; (b) the symptoms of strangulation; (c) methods of reduction, and (d) operation if strangulation exists. 4. State how to proceed to diagnose a suspected rupture of the bladder. 5. Give symptoms of shock and state when the prognosis is grave. 6. Describe, give treatment of, and also give prognosis of fracture of femur in upper third. 7. Give causes and treatment of paraphimosis. 8. Describe the condition known as talipes equinovarus. 9. Describe Pott's fracture, name structures involved and outline treatment. 10. Describe intermediate and secondary hemorrhage, giving both preventive and curative treatment of each.

PHYSIOLOGY AND HYGIENE

1. Mention, in their order of superiority, the best methods of disinfection, and tell how you would proceed to disinfect a house in which there had been a case of scarlet fever. 2. What digestive changes take place in the small intestine; (b) in the large intestine? 3. State origin and uses of lymph. 4. Name and give function of all principal and accessory organs of digestion. 5. Describe the portal circulation. 6. What do you understand by absorption, and how is it accomplished? 7. Define reflex arc and give examples of reflex action. 8. Define the office and characteristics of the gray matter of the brain. 9. Describe different coats of eye and give functions of each. 10. Define myopia, hypermetropia and astigmatism; state cause of each condition.

MATERIA MEDICA AND THERAPEUTICS

1. Give definition of (a) serum therapy; (b) vaccine therapy. 2. What is meant by "opsonins"; and what is the "opsonic index"? 3. Give dose, therapeutic uses, composition and pharmaceutic name of (a) Basham's mixture; (b) Hoffman's anodyne; (c) Dover's powder. 4. Name two respiratory stimulants and two vasomotor depressants; the dose and methods of administration. 5. What are the physiologic effects and medicinal uses of the preparations of "belladonna"? 6. Give medical uses of carbolic acid. Describe physiologic actions. 7. Give physiologic effects of and therapeutic uses of jaborandi or its constituents. 8. What are antacids, anhidrotics, carminatives, hypnotics, revulsives? 9. Give and describe the various kinds of incompatibilities. 10. Describe hypodermoclysis and state the circumstance under which it is practiced as a therapeutic measure.

PATHOLOGY AND BACTERIOLOGY

1. Describe bacterins, serums and toxins. 2. Where is the gonococcus usually found? Describe its characteristics. 3. Give functions and products of bacteria. 4. Name the common pyogenic bacteria. 5. How are tumors classified? Differentiate between sarcoma and myoma. 6. Describe the pathogenesis of gall-stones; also characteristics, physical and chemical, of some variety. 7. Describe microscopic and gross appearances of the lesions in acute parenchymatous nephritis. 8. Mention some pathologic conditions influencing variations in color of stools, and how would you determine presence of substances producing such results? 9. How would you stain any exudate with Gram's method, and what is meant by Gram-positive; Gram-negative? 10. How would you do the Widal reaction?

Book Notices

A MANUAL OF SURGICAL TREATMENT. By Sir W. Watson Cheyne, C.B., D.Sc., LL.D., Hon. Surgeon in Ordinary to H.M. the King; and F. F. Burghard, M.S., F.R.C.S., Surgeon to King's College Hospital. New Edition. Entirely Revised and Largely Rewritten with the Assistance of T. P. Legg, M.S., F.R.C.S., Surgeon to the Royal Free Hospital; and Arthur Edmunds, M.S., F.R.C.S., Surgeon to the Great Northern Central Hospital. In Five Volumes. Vol. I, Treatment of General Surgical Diseases, Including Inflammation, Suppuration, Ulceration, Gangrene, Wounds and Their Complications, Infective Diseases and Tumors, Deformities. With an Appendix on Administration of Anesthetics by Dr. Silk, and the Examination of the Blood, by Dr. W. D'Este Emery. Pp. 552, with 223 illustrations. Vol. II, Treatment of Surgical Affections of the Skin and Subcutaneous Tissues, the Nails, the Lymphatic Glands and Vessels, the Muscles, the Tendons and Tendon-Sheaths, the Nerves, the Veins, the Arteries and the Bones; Amputations. Pp. 570, with 272 illustrations. Cloth. Price, $6 per volume. Philadelphia: Lee & Febiger, 1912.

A complete revision of this popular work in so short a time after the appearance of the previous edition speaks well for it. The original authors have, however, been obliged to turn over the work of revision to two assistants, Legg and Edmunds. The arrangement of previous edjtions has been adhered to, but much that is new has been added, thus bringing the subject matter up to date. Volume I is practically a surgical pathology, although it contains an appendix of about fifty pages given over to a concise but none the less complete discussion of anesthesia and anesthetics. Volume II is devoted to surgical affections of the soft tissues, and the bones. Amputations are also discussed from the present point of view of surgeons who hold that these operations should be done much less often than formerly. The authors rely in the main on personal experience, but give cognizance to whatever may have been done by others, which naturally adds to the value of the books. The illustrations are good and fairly numerous.

DIE VASOMOTORISCH-TROPHISCHEN NEUROSEN. Eine Monographie. Von Dr. R. Cassirer, Privatdozent an der Universität Berlin. Second Edition. Paper. Price, 20 marks. Pp. 988, with 48 illustrations. Berlin: S. Karger, 1912.

Cassirer's monograph on the vasomotor neuroses has become a classic since its first appearance in 1901. Nothing has been published on the same subject which in any degree equals it in thoroughness or monographic accuracy. Constant reference is made in neurologic literature to this meritorious work of Oppenheim's most industrious pupil. The second edition, now before us, is richly illustrated with original drawings and numerous illustrations. The number of pages has been increased from 609 in the first to 988 in the present edition. Perhaps the most praiseworthy feature is the complete and up-to-date bibliography at the end of the volume. This monograph constitutes additional proof of the colossal industry of our German colleagues.

DIE PHYSIKALISCHE THERAPIE DER GELENKKRANKHEITEN FÜR ÄRZTE UND STUDIERENDE. By Dr. Eduard Weisz, Budapest. Cloth. Price, $1.50. Pp. 265, with 83 illustrations. New York: Rebman Company, 1912.

Although the purpose of this book is the presentation in concise form of the methods of treatment of joint diseases, the author devotes the first chapter to a very able discussion of the relation of joint lesions to lesions elsewhere in the body. He regards joint lesions as, in the main, metastatic expressions of some other disease, local or general. Therefore,

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he says, the treatment of all joint lesions is both local and general. What this treatment should be, is the subject discussed in the remaining chapters. Pathology and diagnosis are also discussed briefly. Nothing new is contributed, although emphasis is laid on the treatment of stiff joints by means of specially devised weight traction, which is well illustrated by diagrammatic sketches. One of the chief merits of this little book is the clear and concise statement of facts in headlines for lack of which the physician is often compelled to waste much time.

MANUAL OF SURGERY. By Alexis Thomson, F.R.C.S., Professor of Surgery, University of Edinburgh, and Alexander Miles, F.R.C.S., Surgeon, Edinburgh Royal Infirmary. Three Volumes. Fourth Edition. Cloth. Price, $3.50 per Volume. New York: Oxford University Press, 1912.

This excellent work, although now comprising three volumes, maintains its high standard in this, the fourth, edition. The volumes are small and easily handled and each volume is complete in itself. Volume I is devoted to surgical pathology and bacteriology and surgical principles so far as they bear directly on diagnosis and treatment. The clinical application of each topic is presented in a concise but illuminating manner. A valuable feature in connection with the discussion of injuries and diseases of individual organs and tissues is the summary of the surgical anatomy of the tissue or region concerned. An examination of the subject-matter shows that it embraces everything that is accepted in surgery to-day as fact.

Volume II is devoted to regional surgery and Volume III to operative surgery, thus dividing the technical part of surgery into two natural divisions, theory and practice. The unusually large number of well-made and well-selected illustrations, about 300 per volume, adds greatly to the descriptive features. Of course the small size of the volumes precludes extensive or exhaustive discussion; but each subject is well covered.

MANISCH-DEPRESSIVES UND PERIODISCHES IRRESEIN ALS ERSCHEINUNGSFORM DER KATATONIE. Eine Monographie. Von Dr. Med. Maurycy Urstein. Paper. Price, 30 marks. Pp. 650. New York: Rebman Company, 1912.

In this monograph the author endeavors to prove that many cases considered by Kraepelin and his school as belonging to manic-depressive and periodic insanity really belong to the disease first thoroughly described by Kahlbaum as catatonia. By the latter term Urstein does not mean the so-called form of catatonic dementia præcox; he recognizes catatonia as an independent disease, which may appear under various guises. He differs radically from Kraepelin and supports his contention by publishing *in extenso* case histories which have been accurately recorded in the Schweizerhof asylum under the direction of the deceased Henry Laehr. The greater portion of the monograph (545 pages) is devoted to a reproduction of these histories with comments. Students of psychiatry, whether they agree with the author's interpretation or not, will undoubtedly enjoy reading these.

HANDBUCH DER NERVENKRANKHEITEN IM KINDESALTER. Von Prof. L. Bruns, Prof. A. Cramer and Prof. T. Ziehen. Paper. Price, 30 marks. Pp. 980, with 189 illustrations. Berlin: S. Karger, 1912.

In this handbook Cramer wrote the section devoted to the functional nervous diseases of childhood, Bruns described the diseases of the spinal cord and of the peripheral nerves as they occur in childhood, while the chapters on diseases of the brain and its membranes were furnished by Ziehen. The book contains an account of the most recent work in the neurologic field pertaining to the period of which it treats. As a concise and yet comprehensive treatise on the nervous diseases of childhood, it will no doubt take as high rank as the larger work of Oppenheim, which covers the entire subject of nervous diseases. The book will be found of value by both the general practitioner and the pediatrician.

RECENT METHODS IN THE DIAGNOSIS AND TREATMENT OF SYPHILIS. By Carl H. Browning, M.D., and Ivy McKenzie, M.B.

In our review of this work, October 5, page 1318, we stated that the second part of the work—the part on Ehrlich's treatment—takes up about eight pages. This was a mistake; it should read "about one hundred and forty pages"

Medicolegal

To What Physicians May Testify—Hypothetical Questions

(Union Pacific Railroad Co. vs. McMican (U. S.), 194 Fed. R. 393)

The United States Circuit Court of Appeals, Eighth Circuit, says that a physician called as a witness for plaintiff, McMican, in this personal injury case, examined the plaintiff at the time of the trial for the purpose of testifying in the case, and not for the purpose of treating him. The physician testified that the plaintiff at the time of the examination gave to him a history of himself prior to the time he received his injuries, also a history of the injury, but he did not testify what that history was. The physician was then asked a hypothetical question based in part at least on what the plaintiff had told him relative to his previous history and how the injury occurred. It was error to permit him to answer it. The rule is well settled that, where a physician is called to treat a party professionally, he may give his opinion, based on subjective as well as objective symptoms, but where he is called, not for the purpose of treating the party for the ailment, but for the purpose of giving testimony in the case, he can testify to objective symptoms only. Statements made by the plaintiff at such an examination are mere self-serving declarations, not made under oath. When a hypothetical question is submitted in such a case it should embrace only facts which have been given in evidence. Because that rule was violated in this case a new trial must be granted. The fact that the witness, when interrogated by the court, stated that in his opinion the question fully covered and represented statements made in evidence and the history of the case as stated to him by the plaintiff, did not remove the vice. It was for the court primarily, and the jury finally, to determine whether the question embraced a proper statement of the facts as shown by the evidence, and not for the witness to base his opinion on partly undisclosed statements.

Unnecessary Particularity in Stating Offense

(State vs. Morris (Mont.), 122 Pac. R. 917)

The Supreme Court of Montana reverses a conviction of practicing medicine and surgery without a certificate from the State Board of Medical Examiners, remanding the case for a new trial. The court says that the information charged that the defendant, without having been granted a certificate to practice medicine in the state of Montana, "did . . . prescribe and direct for the use of Emma Van Orsdel, a person then and there afflicted with a certain physical ailment of the body, to wit, sickness from pregnancy, a certain appliance or apparatus, to wit, a certain surgical instrument commonly known as and called forceps. . . ." The offense against which the statute (sections 1591 and 8544, Revised Codes) is directed is practicing medicine or surgery without a certificate from the State Board of Medical Examiners. The statute is in very broad and general terms, but the pleader undertook to state the circumstances of the offense with unnecessary particularity, and in doing so confined the charge to a single act, namely, the giving of a particular prescription, and the evidence offered on the trial failed entirely to sustain the charge thus made.

Distinguishing Between Impairment of Mind and of Power of Expression

(Campbell vs. Hayden (Mo.), 145 S. W. R. 103)

The St. Louis Court of Appeals says that a physician, in describing the condition of a man who had had a stroke of apoplexy, after stating that the conversation carried on between the man and other persons was confined generally on his part to saying "Yes" or "No," said that a certain woman "had the knack of getting on to what he wanted;" that she had become so accustomed to him that she could intuitively guess at what he wanted and ask him if that was it, and he would assent or not. The physician then stated: "It was a condition in which the mind was not

impaired but the way of expressing was the impairment." This sentence, together with what is stated as immediately preceding it, was stricken out on objection. But that was error. It was within the province of the physician to state the condition of his patient, the objective symptoms, and the sentence quoted should not have been excluded in a suit involving the question of the man's capacity to contract or dispose of certain of his property.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Journal of Experimental Medicine, New York

October, XVI, No. 4, pp. 395-579

1 *Fibrillation of Auricles; Its Effects on Circulation. T. Lewis, London.
2 Characteristics of Different Culture Media and Their Influence on Growth of Tissue Outside of Organism. R. Ingebrigtsen, New York.
3 *Relative Prevalence of Human and Bovine Types of Tubercle Bacilli in Bone and Joint Tuberculosis in Children. J. Fraser, Edinburgh.
4 *Acute Vascular Lesions in Mice Following Injections of Pneumococci. T. P. Sprunt and J. A. Luetscher, Baltimore.
5 *Sinus Stimulation as Factor in Resuscitation of Heart. J. Erlanger, St. Louis.
6 Antigenic Properties of Split Products of Casein. F. P. Gay and T. B. Robertson, Berkeley, Cal.
7 Antigenic Properties of a Protein Compounded with Casein. F. P. Gay and T. B. Robertson, Berkeley, Cal.
8 Studies on Ferment Action; Specific Immune Lipase. J. W. Jobling and C. G. Bull, Chicago.
9 Conditions Governing Growth of Displaced Normal Tissue. C. V. Craster, New York.
10 Testing for Epinephrin (Adrenalin) in Blood; Comparison of Plasma and Serum. G. N. Stewart, Cleveland.
11 Lipoid Metabolism in Developing Chick and Its Relation to Calcification. F. M. Hanes, New York.
12 Cell Proliferation and Parasites in Rats. F. D. Bullock and G. L. Rohdenburg, New York.
13 Action of Epinephrin on Coronary Artery. E. A. Park, New York.
14 Question of Epinephrin in Circulation and Its Relation to Blood-Pressure. T. C. Janeway and E. A. Park, New York.
15 *Cultivation of Malarial Plasmodia (Plasmodium Vivax and Plasmodium Falciparum) in Vitro. C. C. Bass and F. M. Johns, New Orleans.

1. **Fibrillation of Auricles.**—Lewis summarizes his paper as follows: When the auricles fibrillate, the following effects are observed: 1. The arterial blood-pressure may rise, fall, or remain stationary. Usually it falls. If it falls, it generally rises again toward or to the initial pressure. 2. The venous pressure changes are the reverse of the arterial. 3. The intestinal volume and the cardiac output changes are in the same direction as those of arterial blood-pressure. 4. From these observations it may be concluded that the peripheral circulatory effects are purely passive. 5. The volume of the heart decreases except in instances in which there is reason to believe that the circulation is failing. All these changes and also the variations in blood-pressure reactions which occur from time to time, are attributable to alterations in the rate of ventricular contraction. Similar, though perhaps less profound, changes are seen when the heart-rate accelerates in like degree in response to regular induction shocks.

3. **Tubercle Bacilli in Bone and Joint Tuberculosis.**—The all important point revealed by Fraser's investigation is the fact that a large proportion of bone and joint tuberculosis occurring in children in Edinburgh owes its origin to infection by the bovine bacillus. The bovine bacillus is introduced into the system practically by one route only, that of ingestion, and the medium with which it is ingested is cow's milk. In those cases in which the human bacillus was present, a considerable proportion showed a definite history of pulmonary tuberculosis affecting a co-resident, and every fact went to prove that the infection had been a direct one from patient to child. A complete distinction can be drawn between human and bovine bacilli, and the distinction is best secured by subjecting the organism to a series of tests such as Fraser details.

Seventy cases of bone and joint tuberculosis were studied by Fraser. With three exceptions the cases were limited to children 12 years of age and under. Without exception the material was obtained by operation. Out of a total of seventy, thirty-nine were cases of joint disease, thirty-one of bone disease. Each case was systematically worked out, and evidence of the identity of the bacillus accumulated until a final conclusion could be reached regarding the class to which the organism belonged. In forty-one instances the bovine bacillus was present, in twenty-six cases the human bacillus, and from the remaining three cases both the human and bovine bacilli were isolated. The outstanding feature is the large proportion of cases which owed their origin to infection by the bovine bacillus.

Fraser says there can be no doubt that milk was the medium through which infection occurred. In the list which he compiled there are a number of children less than one year old; in each of these cases the bovine bacillus was the organism present and each had been entirely nourished on cow's milk. The same lesson is obvious throughout; in the group of cases, the ages of which range from one to two years, twelve in number, there are eight which owed their origin to the bovine bacillus, and every one of the number had been nourished from birth on cow's milk and each showed a family history of pulmonary tuberculosis. It was instructive to note that in no case investigated had any attempt been made to ensure the purity or sterility of the milk.

4. **Acute Vascular Lesions in Mice.**—The authors found that mice dying several days after injections of pneumococci, both living and dead, frequently show at autopsy large intrathoracic hemorrhages. The histologic study of the thoracic organs indicates that there occurs in each case a sharply circumscribed, acute degeneration of the wall of some large vessel, usually the ascending aorta or one of the pulmonary arteries. This degenerated portion is torn out by the pressure of the blood with almost complete disappearance of the vessel wall, leading to a gross hemorrhage. A similar change is occasionally found in the walls of the veins which contain cardiac instead of smooth muscle. They have found this lesion only in mice which had been recently inoculated with pneumococci. Negative cultures at autopsy, the lack of inflammatory reaction, and the occurrence of the conditions after injection of dead pneumococci suggest the cause to be a toxic degeneration of the vessel wall brought about by the poisons of the injected organisms.

5. **Sinus Stimulation in Resuscitation of Heart.**—The experiments described by Erlanger indicate clearly that tetanic stimulation of the sinus region of the auricles is of material assistance to massage in the resuscitation of the heart. It causes the auricles to generate impulses, either rhythmic or irregular, to which the ventricles, when susceptible, respond. When massage administered for brief periods has failed to resuscitate the heart, the same period of massage combined with tetanic stimulation of the sinus has usually brought the circulation back to normal. In some instances massage alone when continued over long periods has been without effect, and to all appearances would have continued to be without effect, whereas at such a time massage combined with stimulation of the sinus has effected recovery. Whether the stimulus causes the auricles to beat normally or to fibrillate seems to make no essential difference in the end result.

Not infrequently conductivity and irritability are lowered to such an extent by the cessation of the circulation that impulses generated in an auricle started by stimulation can at first manifest no effect on the ventricles. Under such circumstances massage alone or, more frequently, massage plus stimulation may cause the ventricles to beat with their inherent slow rate. Often, then, the force of the ventricular contractions is insufficient for the maintenance of an effective circulation. In such cases, however, with the gradual improvement in the condition of the heart, the auricular impulses, as a rule, soon begin to reach the ventricles, with the result that the latter immediately begin to beat more rapidly and effectively. The beneficial results of stimulation of the auricles, therefore, manifest themselves relatively late, but none the less effectively. It has been found that even after the heart has begun to beat, stimulation of the sinus region may still be of some assistance, though in another direction.

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It not infrequently happens that after resuscitation of the heart the blood-pressure fails to rise above a certain low and insufficient level. In such cases repeated tetanic stimulation of the sinus may accelerate the rise of blood-pressure and so hasten recovery. No attempt has been made to determine the mechanism of this effect. The insertion of a sound electrode directly through the chest wall was the method employed by Erlanger. It is inserted as follows: After nicking the skin in the third left interspace as close as possible to the sternal margin, the tip of the sound is placed against the subcutaneous tissue. It is directed perpendicularly to the chest wall and boldly pushed into the pleural space. The point is then directed to the right, and carried through the anterior mediastinum close to the sternum until it has passed some distance beyond the right border of the heart. The sound is then turned until the point looks downward and to the left, and while more and more of the sound is allowed to enter the chest, the outer end is carried upward and to the right. This pass will not meet with any resistance whatever, and will carry the point of the sound exactly to the sinus region of the heart. It just slides along the right side of the pericardium, or, in case it has been carried farther to the right, it is returned to the pericardium by slipping between the lobes of the lung from right to left. Unipolar stimulation is employed.

The sound carries the stimulating electrode; the indifferent electrode is placed on the thigh. The pericardium lies between the electrode and the heart. Ordinarily it is so thin that it in no way interferes with the application of the stimulus to the heart. Occasionally, however, the pericardial fat is so abundant as to insulate the heart more or less completely. In such a case the method is of no value. When the sound is withdrawn, even though no precautions are taken, air does not enter the chest, provided the subcutaneous tissue has not been cleaned away from the muscle. In this series of experiments stimulation of the sinus was employed as an adjuvant to subphrenic cardiac massage.

15. See Editorial in THE JOURNAL, October 12, p. 1381.

Journal of Michigan State Medical Society, Battle Creek

October, XI, No. 10, pp. 609-682

16 Plea for Combined Scientific and Literary Course Preliminary to Study of Medicine. C. L. Girard, Escanaba.
17 Primary Hyperplastic Tuberculosis of Appendix. A. W. Blain, Detroit.
18 Chronic Suppuration of Antrum of Highmore; Its Cure by Resection of Nasal Wall. O. T. Freer, Chicago.
19 Direct Transfusion of Blood; Report of Two Cases. A. M. Campbell, Grand Rapids.
20 Treatment of Ascites. W. J. Wilson, Detroit.
21 Salvarsan in Intestinal Keratitis; Report of Ten Cases. W. R. Parker, Ann Arbor.
22 Nature, Symptoms and Treatment of Toxemias of Pregnancy. J. B. Whinery, Grand Rapids.
23 Surgical Tonsil; Indications and Technic Required for Enucleation. B. R. Shurley, Detroit.
24 Pituitary Extract in Obstetrics and Gynecology. A. W. Loscher and O. E. Closson, Detroit.
25 Indications for Enucleation. C. R. Elwood, Menominee.
26 Vaccine Therapy in Diseases of Eye, Ear, Nose and Throat. D. B. Cornell, Saginaw.

New Orleans Medical and Surgical Journal

October, LXV, No. 4, pp. 265-338

27 •Culture and Biologic Characteristics of Lepra Bacillus. A. J. Smith and D. Rivas, Philadelphia.
28 Detection of Cholera Bacillus from Feces and Water in Twenty-Four to Forty-Eight Hours. D. Rivas and A. J. Smith, Philadelphia.
29 Clinical Study of Arteriosclerosis of Heart. A. J. Delcourt, Houma, La.
30 Non-Poisonous Anesthesia of Mucous Membranes. O. Joachim, New Orleans.
31 Prevention of Deafness W. Scheppegrell, New Orleans.
32 Importance of Prompt Recognition and Treatment of Laryngeal Diphtheria. G. C. Chandler, Shreveport, La.
33 •The Moving Picture and the Eye. C. A. Bahn, New Orleans.
34 Treatment of Pellagra. I. Dyer, New Orleans.
35 Diphtheria. S. G. Wilson, New Orleans.
36 Needs of American School of Tropical Medicine Recently Established at New Orleans in Tulane University. I. W. Brewer, Fort Niagara, N. Y.

27. **Characteristics of Lepra Bacillus.**—Two lepra cases were studied carefully and thoroughly by Smith and Rivas. Blood cultures made from lepra nodules, venous blood and peripheral blood from the finger, showed the presence of acid-fast bacilli resembling *Bacillus leprœ*. These cultures, though impure, have been transplanted four times with successful results in so far as the reinoculated tubes show the organism in question in association with other bacteria. Finally, the blood samples were taken from the nodule, the finger and great toe. The latter locality was preferred in order to eliminate any possible contamination of the finger from the nose, through scratching of the nodule, etc. About 0.1 c.c. to 0.2 c.c. of blood was removed and immediately mixed with about 5 c.c. of a 2 per cent. acetic acid solution. After thorough shaking and complete solution of the erythrocytes, the mixture was centrifuged and the sediment stained for acid-fast bacilli. The result was very interesting.

The presence of the acid-fast bacilli, resembling *B. leprœ* in their grouping, and more especially the finding of lepra cells, filled with acid-fast bacilli, is an evidence, the authors believe, of the presence of *Bacillus leprœ* in the circulating blood in cases of leprosy, more especially since, not uncommonly, these acid-fast bacilli were found phagocytized by some lymphocytes and endothelial cells. This is another proof of the favor of the bacteremic nature of leprosy, because this phagocytosis can be interpreted only as taking place in the circulating blood, or, at any rate, inside of the blood vessels. The question naturally arose whether these acid-fast organisms were not present in the material used for the solution of the blood. The authors have centrifuged their acetic acid solution, and the scanty sediment spread on slides previously prepared with a film of albumin and stained for acid-fast organisms; the albumin above was treated in like manner; finally the blood of one of the authors was tested as control. In each case, in the water, in the albumin and in normal blood, acid-fast structures are found, if looked for long enough; they are, however, very few. Most of them are what are called acid-fast amorphous masses, and though bacillary types were occasionally encountered, these were very few, and in no case were they found in the form of lepra cells, phagocytized by the lymphocytes.

33. **Moving Picture and Eye.**—The symptoms Bahn has noted, after a more or less protracted moving picture seance, in normal eyes, are in order of frequency: 1. Injection of the lid margins and conjunctiva, increased in those predisposed, and produced in the normal. 2. Lacrimation, usually associated with the above, but not always. 3. Retinal fatigue or a sense of tiring deep in the eyes, as may be produced by looking at any point for a more or less protracted time. 4. Pain in and around the ciliary region, which Bahn has noted especially in the astigmatic, and in those with muscular anomalies. 5. Headache, either frontal or occipital, usually the former, on both sides. 6. Muscæ volitantes. 7. Dizziness. Bahn believes that moving pictures, if favorably presented, under the most favorable conditions, are a more or less severe test of distant vision and endurance on the normal eye, depending, of course, on the length of time the pictures are viewed. The vast majority of persons with normal eyes can endure four sittings of thirty minutes each per week, with but little or no temporary unpleasant symptoms and no permanent ill effects.

The large proportion of those who complain of unpleasant symptoms under this time from moving pictures under the most favorable conditions have some error of refraction not properly corrected, improper muscle balance or defect of sight, or constitutional condition lowering eye endurance. The symptoms produced are essentially those of asthenopia and their sequelæ. Moving pictures, however, under unfavorable circumstances, poorly developed, scratched or defective films, inferior cameras, objectionable screens, irregular and poorly-focused projection, too great or too slight illumination, etc., even in moderation, will produce asthenopic symptoms in any pair of eyes, normal or abnormal. In those who suffer premature or severe asthenopic symptoms from moving pictures under the most favorable circumstances and in moderation, relief lies in the correction of any refraction error, and the benefits that medical science can afford, on the one hand, and less or no moving pictures on the other.

Journal of Oklahoma State Medical Association, Muskogee

October, V, No. 5, pp. 181-234

37 Abdominal Infections. H. Reed, Oklahoma City.
38 Puerperal Eclampsia; Causation and Treatment. R. W. Williams, Anadarko.

39 Lymphatic Diseases of Children. W. M. Sanger, Oklahoma City.
40 Physician as Teacher of Sexual Hygiene. A. S. Risser, Blackwell.
41 Failures in Gall-Bladder Surgery. J. H. White, Muskogee.

Journal of Biological Chemistry, Baltimore

October, XIII, No. 1, pp. 1-109

42 Copper Complexes of Amino-Acids, Peptides and Peptones. P. A. Kober and K. Sugiura, New York.
43 *Mechanism of Phlorhizin Diabetes. F. P. Underhill, New Haven, Conn.
44 *Animal Calorimetry: Metabolism After Ingestion of Dextrose and Fat, Including Behavior of Water, Urea and Sodium Chlorid Solutions. G. Lusk, New York.
45 Idem: Absorption of Dextrose and Effect It Has on Composition of Blood. G. Fisher and M. B. Wishart, New York.
46 Bacterial Metabolism. A. I. Kendall and C. J. Farmer, Boston.
47 Behavior of Fat-Soluble Dyes and Stained Fat in Animal Organism. L. B. Mendel and A. L. Daniels, New Haven, Conn.
48 Some New Compounds of Cholin Type. G. A. Menge, Washington, D. C.

43. **Mechanism of Phlorhizin Diabetes.**—The mechanism of phlorhizin diabetes has been subjected to investigation by Underhill after the removal of the renal secretory function by (a) ligation of the renal structures in the dog and (b) abolition of kidney secretion through subcutaneous administration of sodium tartrate to rabbits. In both conditions a significant hyperglycemia may be in evidence. With dogs this is accompanied by a decrease in the proportion of solids in the blood; that is, the water content is increased. The data presented lead to the suggestion that phlorhizin may possess a two-fold action: (a) an influence is exerted on the kidney whereby this organ becomes more permeable for blood sugar, and (b) an action on other structures resulting in the production of sugar in quantities sufficient to cause hyperglycemia if the kidney function is removed.

44. **Metabolism of Dextrose and Fat.**—It was noted by Lusk that, after giving 100 grams of dextrose to a dog, the skin temperature rose during the second hour, while the rectal temperature fell slightly. When 50 grams of dextrose are given the sugar content of the blood in per cent. is first increased, but by the end of the second hour and thereafter, it is found to have returned to its normal percentage value. The volume of the blood, however, increases during the second hour, obviously in response to the osmotic pressure exerted by the increased sugar concentration. The increase in blood volume is demonstrated by the fall in the hemoglobin content of the blood. During this period, the metabolism shows an increase of 20 per cent. above the normal basal value. During the fourth hour there is final absorption of all the dextrose ingested, the metabolism remains high and there is a large excretion of water in the urine. At the end of the same fourth hour, the blood sugar content is normal, indicating that, during the withdrawal of water and the concentration of the blood, the liver and muscles maintain the normal sugar content of the blood. During the second, third and fourth hours, the high metabolism is accompanied by respiratory quotients of about 1.00 (after allowing for the influence of protein metabolism). However, during the fifth hour, when the metabolism has returned to its basal value, a non-protein respiratory quotient of 0.83 indicates that a mixture of fat and carbohydrate is being oxidized.

The glycogenic function apparently enters into control and reduces the amount of carbohydrate available for combustion, and fat is oxidized as well. If 20 grams of dextrose be given, a rise of 15 per cent. may take place during the second hour after sugar ingestion, to be followed by a normal basal metabolism in subsequent hours. If 75 grams of dextrose be given, a 20 per cent. increase in metabolism continues from the second through the fifth hour, during which hour the volume of urine becomes large, indicating that this is the final hour of the higher metabolism. It is shown that ingestion of 200 c.c. of water, of 150 c.c. of an 8 per cent. solution of urea have no influence on metabolism. It is, therefore, concluded that the high metabolism after giving dextrose is not due to osmotic changes between the blood and the tissues. The only remaining conclusion which appears possible to Lusk is that the increase in metabolism is due to the presence of a greater amount of free diffusible carbohydrate than is present when there is no absorption of carbohydrate from the intestines.

Military Surgeon, Washington, D. C.

October, XXXI, No. 4, pp. 357-489

49 Medical Department of U. S. Army in Civil War. L. C. Duncan, U. S. Army.
50 Leprosy in Philippines. J. R. Hurley, Island of Panay, P. I.
51 Division Field Laboratory: Its Possibilities as Illustrated by Experiences with Maneuver Division. G. B. Foster, U. S. Army.
52 Poisoning from Bacillus Enteritidis. F. Anderson, U. S. Navy.
53 Pneumonia and Allied Diseases at Newport Training Station. O. Diehl, U. S. Navy.
54 Quarterly Report of Board for Study of Tropical Diseases in Philippines—March 31, 1912. P. M. Ashburn, E. B. Vedder and E. R. Gentry, U. S. Army.
55 Diagnosis Tag. M. Ashford, U. S. Army.
56 Disposal of Garbage in Barracks. P. L. Jones, Fort Leavenworth, Kan.
57 Salvarsan and Malaria. R. H. Goldthwaite, U. S. Army.

Illinois Medical Journal, Springfield

October, XXII, No. 4, pp. 417-540

58 *Means for Accurate Determination of Human Internal Parasites. H. B. Ward, Urbana, Ill.
59 *Some Modern Medico-Sociologic Conceptions of Alcohol, Venereal Diseases and Tuberculosis Problems. S. A. Knopf, New York.
60 Tuberculosis Work in Europe. J. W. Pettit, Ottawa, Ill.
61 Value of Field Work in Study of Heredity in Mental Diseases. H. A. Cotton, Trenton, N. J.
62 *Adenoid Vegetations of Nasopharynx. J. W. Smith, Bloomington, Ill.
63 Rationale of Sinus Disease and Its Treatment. W. L. Ballenger, Chicago.
64 Primary Melanotic Sarcoma of Iris, Followed by Extensive Metastatic Melanosarcoma of Liver. G. F. Suker and L. N. Grosvenor, Chicago.
65 Ringworm Infections and Their Management. J. S. Elsenstaedt, Chicago.

58. **Accurate Determination of Human Internal Parasites.**—Within very recent years, says Ward, the discovery of important causes of disease in the animal field has accentuated the need of some reliable basis in knowledge or technic for diagnosing accurately the animal organisms related to disease. Such a determination falls within the field of clinical microscopy and constitutes an evidently important section of that field. In spite of its importance, however, this study has been seriously neglected and men of scientific training and habits have been contented with a rough approximation or even with a guess at the character of parasitic material which has presented itself in the course of clinical examinations.

How scanty the knowledge of this field and how low the standards which seem to satisfy even the better class of workers is evidenced by the publication recently in one of the foremost medical journals of a cut representing the seat worm of man (*Oxyuris vermicularis*), which would not be accepted from a freshman in any reputable college course in zoology. Errors in observation and delineation, faulty descriptions of structure and incorrect measurements have resulted in confusing forms of very different clinical importance and in concealing the presence of new and dangerous human parasites. Many are already fully alive to the possibilities in unexplained etiology and are searching diligently for an explanation in the form of some unrecognized parasite, either animal or plant. It has been in part no doubt the lack of such data which has necessitated the general diagnosis of "worms," when a determination of the particular species would have been more to the point. Moreover, the unfamiliarity with such organisms and the criteria for distinguishing them from each other and from extraneous substances has certainly led to frequent misinterpretation of harmless residual food materials as dangerous parasites, or *vice versa*, to the failure to recognize parasites which were abundant and significant.

To sum up, then, this phase of the discussion: The physician must first of all look for parasitic organisms of the animal type as well as those of plant nature, and in the next place it is equally important that he be able to determine the nature of the material that comes within his notice. Ward then enters into a very excellent and wide discussion of animal parasites that have been found in the human body and how they may be identified.

59. Abstracted in THE JOURNAL, June 1, p. 1709.

62. **Adenoid Vegetations of Nasopharynx.**—It has been Smith's practice for several years in treating these growths to use a finger curet of his own design, that has proven serviceable. The curet is placed on the index finger, with its cutting blades above, and when it is introduced into the

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postnasal space, the blades of the instrument come into direct contact with the adenoid tissue to be removed. There is freedom in its use from the dangers of injuring the soft palate and the posterior end of the nasal septum, which may occur in the use of forceps or curets with long handles. Having ascertained the condition of the nasopharynx by a digital examination previous to the operation, the operator with the finger and the finger-curet in place, when introduced into the postnasal space, has some advantage in feeling his way as he removes the growths and is thus enabled to some extent by tactile sensation to make the proper amount of pressure when and where it is needed in excising them.

Journal of Medical Association of Georgia, Augusta

October, II, No. 6, pp. 179-208

66 Tobacco vs. Alcohol. J. G. Dean, Dawson.
67 Experimental Pellagra. G. C. Mizell, Atlanta.
68 Induction of Labor in Puerperal Eclampsia. T. J. Carswell, Waycross.
69 Menstruation, Normal and Abnormal. J. R. B. Branch, Macon.
70 *Intestinal Resection in Strangulated Inguinal Hernia; Report of Cases. W. W. Battey, Augusta.
71 Radical Surgery of Cases of Cancrum-Oris or "Noma," with Report of Case of Bilateral Infection Complicating Typhoid; Recovery. B. S. Moore, Atlanta, and J. S. Clifford, Charlotte, N. C.

70. Abstracted in THE JOURNAL, June 8, 1782.

Mississippi Medical Monthly, Vicksburg

October, XVII, No. 6, pp. 111-130

72 Puerperal Injuries. J. W. Gray, Clarksdale.
73 Tetanus; Report of a Case. C. B. McCown, Prairie.
74 *Prevention and Treatment of Malaria in Negro Race Under Delta Conditions. W. B. Harrison, Whitney.
75 Surgical Treatment of Hemorrhoids. J. O. Gurney, Tupelo.
76 Water Cure for Snake-Bite. A. L. Chapman, Lyon.
77 Peculiar Fetus. J. A. Davis, Dockery.
78 Consideration of Most Common Diseases of Tonsils and Treatment. H. L. Murphy, Arkabutla.

74. Malaria in Negro Race.—The treatment of malaria in the colored man, Harrison says, differs from routine treatment in the whites, not so much in kind as in method of administration. Negroes are so prone to neglect the taking of medicine, the nearer we can come to the giving of all under physician's eye, the better. The dose of calomel employed by Harrison is larger than that ordinarily recommended in the text-books. He has never been able to get more than watery actions from the bowels with the smaller doses. Ordinarily, he gives from 15 to 40 grains in conjunction with the compound extract of colocynth. This thoroughly cleanses the bowels, removes accumulated bile from the system, and acts as a diuretic. Salivation is rare. If the negro can be seen directly following the chill, it is better to give a massive dose of quinin and follow this with the same drug on succeeding days. In estivo-autumnal malaria it is better to give the quinin in small doses frequently repeated.

The follow-up treatment is most important, and at the same time most difficult to accomplish. Indeed, were it not for the natural relative immunity of the negro, and the tendency to spontaneous cure, this disease, Harrison says, would produce sad havoc in this people. As it is, pernicious malaria is not common, neither is the chronic type, while malarial cachexia is rare. Owing to prejudice against capsules, and a hysterical difficulty in swallowing them, it is often less difficult to get these patients to take a disagreeable potion than to take quinin in what is, to the Caucasian, the much more pleasant way. These patients will often take the drug in coffee.

Lancet-Clinic, Cincinnati

September 28, CVIII, No. 13, pp. 323-350

79 Abdomen Philosophically and Clinically Considered. W. E. Lewis, Cincinnati.
80 Twenty-One Cases of Pulmonary Tuberculosis Treated by Dioradin. M. J. Schwerd and A. L. Goldwater, New York.

October 5, CVIII, No. 14, pp. 351-378

81 Our Imbecility. I. O. Allen, Metamora, Ind.
82 Tumor and Clinical Pathology of Hypophysis. D. I. Wolfstein, Cincinnati.

Interstate Medical Journal, St. Louis

October, XIX, No. 10, pp. 819-918

83 Critical Review of Theory of Muscle Rigidity and Degeneration in Pulmonary Tuberculosis and Other Conditions of Thorax; Nervous Mechanism and Diagnostic Limitations. J. L. Pomery, Monrovia, Cal.
84 *Bacterin Treatment of Pertussis. J. Zahorsky, St. Louis.
85 Auscultatory Blood-Pressure Phenomenon; Clinical Determination of Diastolic Pressure. L. M. Warfield, Milwaukee, Wis.
86 Results of Early Diagnosis of Urinary Tuberculosis. W. F. Braasch, Rochester, Minn.
87 Drug Influence on Extrasystoles of Mammalian Heart. C. P. McCord, Ann Arbor, Mich.

84. Treatment of Pertussis.—Pertussis bacterin in doses of 30 to 50 million has been found by Zahorsky to be a very helpful therapeutic resource. He says it should be given hypodermically every three of four days in infants from the very beginning; in older children at the height of the disease. It is questionable whether it hastens permanent immunity.

Proctologist, St. Louis

September, VI, No. 3, pp. 93-258

88 Relationship and Duties of Proctologist to Profession. J. L. Jelks, Memphis, Tenn.
89 Proctologic Literature from March, 1911, to March, 1912. S. T. Earle, Baltimore.
90 Postoperative Care of Rectal Cases. W. M. Beach, Pittsburgh.
91 Patulous Anus; Its Clinical Significance. A. J. Zobel, San Francisco.
92 *Surgery of Colonic Obstipation. L. J. Hirschman, Detroit.
93 Roentgenographic Method of Examining Cases of Constipation and Obstipation; Method of Visualization of Abdominal Lesions of Intestinal Tract. A. F. Holding, New York.
94 Valvotomy. G. B. Evans, Dayton, Ohio.
95 Multiple Adenomata of Rectum. E. H. Terrell, Richmond, Va.
96 *Relationship of Tuberculosis to Perirectal Suppurations. C. F. Martin, Philadelphia.
97 Anorectal Disease Due to Venereal Infection. J. A. McVeigh, Detroit.
98 Pruritus Ani; Its Probable Etiologic Factor. D. H. Murray, Syracuse, N. Y.
99 Colonic Dilatation (Congenital and Acquired) as Factor in Chronic Intestinal Obstruction (Obstipation). S. G. Gant, New York.
100 Acute Postoperative Paresis of Intestine. J. A. MacMillan, Detroit.
101 Prophylaxis and Treatment of Postoperative Retention of Urine. F. C. Yeomans, New York.
102 Intrarectal Rupture of Suppurating Sinus from Hip-Joint Disease. R. W. Jackson, Fall River, Mass.
103 Keloidal Tuberculoma; Fibromatous Keloid. A. B. Graham, Indianapolis.
104 Three-Step Operation in Tumors of Sigmoid Colon. J. P. Tuttle, New York.
105 Subnormal Colonic Function as Diathesis. J. C. Brick, Philadelphia.
106 Demonstration of Hanes' Position and Table. G. S. Hanes, Louisville, Ky.
107 Excision Operation for Internal Hemorrhoids, with New Clamp. R. H. Barnes, St. Louis.

92. Surgery of Colonic Obstipation.—From an experience with a considerable number of cases, Hirschman concludes that most cases of chronic constipation are colonic in origin and many are obstructive in type. Many cases of colonic obstipation suffer from chronic dilatation of the colon with or without ptosis. Roentgenography he regards as a most vital necessity in the diagnosis of all cases of chronic interference with bowel function. Its negative value may be greater than its positive. A chronically over-distended colon, whether adherent or not, never again becomes a normally functionating bowel. Intestinal adhesions usually tend to recur in increased intensity, and adhesions only cause symptoms when put under stress or tension. The prevention of tension is physiologic rest to the affected organ and colonic rest is obtained only by colectomy, colostomy or exclusion.

Colectomy, as advocated by Lane, Hirschman says, is an operation seldom advisable and has many obvious objections from the standpoint of patient and physician. It is too grave a procedure to be undertaken except in the most aggravated cases. Strictures, neoplasms and other obstructions should be removed by excision of the diseased tissue and lateral anastomosis of the bowel. Exclusion by ileo-colostomy is safe, easy to perform, and most satisfactory in the restoration of normal peristalsis and consequently normal health. After an experience with nearly fifty cases requiring exclusion or resection of the colon for obstructive constipation, with but one failure, Hirschman feels fully justified in recommending it in all cases of aggravated colonic obstipation, whether congenital, postoperative or dependent on some mechanical obstruction or narrowing of the bowel.

96. Tuberculosis and Perirectal Suppurations.—The frequent association of pulmonary tuberculosis with perirectal suppurations prompted Martin to determine such frequency of coincidence, and, if possible, the relationship between these two conditions. Careful observation and study of nearly 400

consecutive cases of such suppurative rectal conditions as abscess, fistula and stricture, disclosed facts which seem to point to some definite relationship, pulmonary tuberculosis being, at least, a very strong predisposing factor toward these conditions. Of the 376 consecutive cases studied 288 were males and eighty-eight females. The ages of these patients ranged from 7 months to 87 years. The large number of patients between the ages of 21 and 60 years is explained in two ways. It is during this period that patients in active pursuit of a living are more exposed to traumatism. On the other hand, since there is a tuberculous element in most of these cases, it is highly probable that few of these live much beyond 50 or 60 years of age. In fact, between 51 and 60 years there is a rapid falling off in number to 40 and against 84 in the preceding decade.

For purposes of study, Martin has divided the cases into four major groups, the actively tubercular, the chronically tubercular, the phthisenoid, and those in apparently good health. The active cases (144) included those with signs of infiltration or cavity formation, with the presence of râles, cough, expectoration, hemoptysis and other typical signs of active pulmonary involvement. In the classification of chronic tuberculosis (sixty-eight cases) are included those cases showing infiltration, without the presence of discernible râles, those giving a history of previous active pulmonary infection, but with improvement in health, weight, absence of cough or expectoration; in other words, arrested or quiescent cases. Some cases gave a few physical signs, other than slightly impaired resonance over one or both apices, with retraction of the supra- and infra-clavicular spaces. A very few patients seemed to be in good physical condition but gave pronounced tuberculin reactions. The phthisenoid cases (twenty cases) included those whose general appearance would suggest a tuberculous process, but in which either no lung examination had been made or no definite local lesions could be brought out. The group reported as being in good health (fifty-five cases) were those robust in appearance, without any demonstrable local pulmonary changes.

Boston Medical and Surgical Journal

October 10, CLXVII, No. 15, pp. 495-530

108 Surgical Aspects of Fat. J. M. T. Finney, Baltimore.
109 Norway Revisited. C. K. Austin, Paris, France.
110 *Effect of Pasteurization of Milk on Babies. J. L. Morse, Boston.

110. **Effect of Pasteurization of Milk on Babies.**—Morse believes that it is impossible to determine from the evidence at present available whether or not babies fed continuously on pasteurized milk thrive as well as those fed on raw milk or whether or not the continuous use of pasteurized milk predisposes to the development of the diseases of nutrition. There is sufficient evidence to show, however, that if the continuous use of pasteurized milk is injurious to babies, its possibilities for harm are much less than those of bacteria. All but the cleanest milk should, therefore, be pasteurized before it is given to infants. There is, on the other hand, sufficient doubt as to the innocuousness of pasteurized milk to justify the avoidance of pasteurization whenever the character of the milk warrants it. The question as to the effect of the pasteurization of milk on the nutrition of infants can only be settled by a much more careful and extensive study of the whole subject, both in the laboratory and clinically, than has hitherto been undertaken.

West Virginia Medical Journal, Wheeling

October, VII, No. 4, pp. 109-146

111 Surgery of Our Own Country. E. W. Strickler, Kingwood.
112 Prophylaxis of Typhoid. F. W. Hachtel and H. W. Stoner, Baltimore.
113 Cancer a Motile Germ, and Meaning of This Fact to Clinician. G. B. Massey, Philadelphia.
114 Pyorrhea Alveolaris. C. H. Chapman, Webster Springs.
115 Septic Sore Throat. W. S. Link, Parkersburg.

Medical Record, New York

October 12, LXXXII, No. 15, pp. 645-690

116 *Gout of the Intestines. A. Haig, London, England.
117 Agar Tubes for Estimation of Pancreatic Ferments. M. Einhorn, New York.
118 History of Lithotomy Operation. M. Kahn, New York.
119 Some Blunders Made by Nature in Treating Disease. A. Maverick, San Antonio, Tex.
120 Etiology of Adhesions of Large Intestine. G. B. Rhodes, Cincinnati.
121 *Increase in Death-Rate from Diabetes in New York; Possible Explanation. J. G. Wilson, Ellis Island, N. Y.

116. **Gout of Intestines.**—Gout of the intestines according to Haig is a catarrhal process, affecting first of all the mucous coats of the alimentary canal. It may be limited to the mucous coat or spread to neighboring fibrous tissues. It goes through various stages of congestion, with mucous, mucopurulent and purulent exudation, and is more easily cured in its early stages before the exudations are purulent. It may go on to ulceration, fibrous tissue increase, adhesion and distortion of structure, more rarely to definite accumulation and deposit of urate in bulk (biurate) visible to the naked eye; but a certain amount of interstitial accumulation to be found by chemical analysis is not uncommon. It affects chiefly and in the first place parts exposed to cold, acids, heat, or irritant substances. It may spread from these parts either by fibrous tissue continuity or by the spread of microbic invasion hand in hand with urate precipitation and defective circulation and metabolism through the tissues.

The chronic irritation it produces in these tissues may, like the similar irritation similarly produced in other tissues, though called by other names, pave the way for cancer and cancer, like the catarrh which precedes it, affects chiefly the parts exposed to cold, acids, heat, and irritant substances. Both cancer and catarrh avoid those parts which are not so exposed, or which, owing to warm position, alkaline secretion and a large supply of alkaline blood are but little liable to urate precipitation. They both also affect largely the acid parts, stomach and rectum. These intestinal troubles not only occur in constant relation to gout and rheumatism in other tissues, but in common with bronchial and other respiratory catarrhs are all made worse by acids, cold and retentives, and all made better by alkalies, heat and solvents of uric acid, so that the diagnosis in any given case need not long remain in doubt. And once this diagnosis has been correctly made, Haig says, it is a matter of certainty that the uric-acid-free diet, properly inaugurated and continued, will remove eventually not only all signs of and all tendency to catarrh but many even of the fibrous tissue changes and distortions.

121. **Increase in Death-Rate from Diabetes in New York.**—Wilson claims that the increased death-rate from diabetes finds its chief explanation in the increase of the Jewish population.

New York Medical Journal

October 12, XCVI, No. 15, pp. 721-772

122 Blonds and Brunettes in Tropics. C. E. Woodruff, San Francisco.
123 Treatment of Diabetes. A. Bassler, New York.
124 Errors in Treatment of Senile Cases. I. L. Nascher, New York.
125 Specific Complement Deviation Reaction in Gonorrhea: Its Value as Aid to Clinical Diagnosis. J. A. Gardner and G. H. A. Clowes, Buffalo.
126 Ten Sex Talks to Girls. I. D. Steinhardt, New York.
127 High-Frequency Currents in Eczema. E. G. Charbonneau, Newark, N. J.
128 Traumatic Separation of Epiphyseal Beak of Tibia. G. B. Rhodes, Cincinnati.
129 Tuberculous Cervical Lymph-Nodes Cured by Roentgen-Ray. M. Strunsky, New York.
130 *New Theory Concerning Origin of Heart-Beat. B. Kaufman, Marysville, Cal.
131 Anatomy of Colon; Frequent Surgical Annoyance. J. D. Bloom, New Orleans.
132 Sputum Examinations and Tuberculin Tests at Gouverneur Hospital Tuberculosis Clinic. M. M. Fladen, New York.

130. **Origin of Heart Beat.**—The intracardiac pressure of the fluid in the heart chambers, or what was originally a straight tube, is held by Kaufman to be responsible for heart action. The fluid stimulates the muscle and other cells to contract by reason of the great pressure and then to relax when the fluid is expelled.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XXXIX, No. 10, pp. 649-720

133 Two Cases Exhibiting Lesions of Special Interest for Localization of Aphasic Disorders. L. Archambault, Albany, N. Y.
134 Apparently Normal Man with Persistent Ankle Clonus. C. S. Potts, Philadelphia.
135 *Central Pain; Pathologic Study of Eight Cases. J. H. W. Rhein, Philadelphia.
136 Polioencephalitis Superior of Wernicke; Report of a Case. H. M. Langdon, Philadelphia.

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135. **Central Pain.**—One personal case and seven others of hemiplegia with painful manifestations were analyzed by Rhein. In four of these cases the pain was spontaneous. In one case there was no pain on pressure, the pain being entirely independent of pressure or movement of the limbs. The multiplicity of the lesion in this case makes it impossible to draw any definite conclusion, though the basal ganglia were the seat of a wide-spread lesion of a minute character. In a second case, the pain was also spontaneous and there was no note of pain on pressure. The lesion was in the lenticular nucleus. In another case, the pain was not only spontaneous, but when the bony parts were pressed on there was also complaint of pain. There was an old scar in the contralateral optic thalamus. In a fourth case, sharp shooting pains were complained of as well as pain on pressure over the nerve trunks. In this case the lesion was one of cerebrospinal lues, and the meningeal irritation at the roots may have been the cause of the pain. In four of the cases the pain was only manifested on movements of the limbs or pressure.

In one case, there was pain in the right arm on pressure or movement. The left optic thalamus was the seat of a hemorrhage, which implicated also the internal capsule. In one case, passive movements of the left leg gave great pain. The lenticular nucleus was the seat of an area of softening which involved also the motor cortex. In one case, pressure over the calf muscles and the right arm was painful. A recent hemorrhage was seen in the left cornu ammonis and linear scar was present in the left external capsule. Some degeneration of the pyramidal tract on one side could be seen by the Marchi method. In one case, passive movements of the right arm and leg gave pain, though pressure was painless when the limbs were at rest. The lesion was in the left lenticular nucleus and in the external capsule. The painful conditions found in these cases were independent of contracture. Rhein believes that it seems justifiable to conclude that central pain may be found associated with lesions in many localities, but the cases in which the optic thalamus is implicated are in the majority.

Journal of Tennessee State Medical Association, Nashville

July, V, No. 3, pp. 93-138

137 Modern Advances in Operations for Cataract and Glaucoma. L. W. Fox, Philadelphia.
138 *Surgery of Tonsil as Related to Chronic Diseases. C. B. Wylie, Chattanooga.
139 *The Tonsils. C. B. Jones, Knoxville.
140 *Traumatic Neuroses Due to Alleged or Actual Injury, from Medicolegal Standpoint. R. Wallace, Chattanooga.

August, V, No. 4, pp. 139-173

141 Cold-Blooded Zoologic Inquiry Into American* Patriotism. C. W. Stiles, U. S. Public Health Service.
142 Vaccination Against Typhoid. W. Litterer, Nashville.
143 Prevention of Typhoid. W. C. Officer, Monterey.
144 Typhoid. R. E. L. Smith, Doyle.
145 Perforation of Gall-Bladder, with Report of Seven Cases. B. Malone, Memphis.
146 Man's Friend, the Doctor. J. T. Lelyett, Nashville.

September, V, No. 5, pp. 175-218

147 Surgical Management of Exophthalmic Goiter. W. D. Haggard, Nashville.
148 Treatment of Compound Fractures of Long Bones. S. R. Miller, Knoxville.
149 Acute Anterior Poliomyelitis. J. H. Atlee, Chattanooga.
150 *Treatment of Peritoneal Infections. W. M. McCabe, Nashville.
151 *Placenta Praevia, with Report of Case. M. A. Blanton, Baileyton.
152 Treatment of Fracture. R. Caldwell, Nashville.

138, 139 and 140. Abstracted in THE JOURNAL, April 27, pp. 1307 and 1308.

150 and 151. Abstracted in THE JOURNAL, April 27, p. 1309.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

September 28, II, No. 2700, pp. 753-828

1 Carcinoma of Colon. V. Z. Cope.
2 *Appendicitis: Results of Operations on 619 Patients. W. G. Richardson.
3 Spontaneous Reduction of Intussusception. T. B. Henderson.
4 Fractured Pelvis Complicated by Laceration of Femoral Vein Treated by Lateral Vein Suture. M. Moritz.
5 Reflections After Twenty-One Years of General Practice. F. W. Jolliye.
6 *Sterilization of Skin by Spirituous Solution of Mercury Perchlorid. C. Clarke.
7 *Iodin as Dressing for Operation Wounds. F. C. Madden.
8 *Iodin as Sole Preparation and Dressing for Operation Wounds. F. J. A. Dalton.
9 Development and Growth of Bone, Normal and Abnormal. W. Macewen.
10 Diaphragm in 7 mm. Human Embryo. P. Thompson.
11 Abnormality of Urinary System. A. C. Geddes.
12 Specimen Illustrating Pseudohermaphroditism. A. C. Geddes.
13 Case of Transposition of Viscera. J. S. Manson.
14 Anatomy of Vestigial Structures in Neighborhood of Epididymis and Cord. W. Wright and R. G. Brown.
15 Comparison Between Two Hearts. J. S. Dickey.
16 The Stomach. R. J. Anderson.
17 Asymmetry. R. J. Anderson.
18 Anatomy of Normal Stomach. A. F. Hertz.
19 Biophysics and Biochemistry of Neuron. F. W. Mott.
20 Some Dynamic Principles Involved in Progression. T. G. Brown.
21 Substance from Yeast and Certain Foodstuffs Which Prevents Polyneuritis (Beriberi). C. Funk.
22 Tissue Respiration. H. E. Roaf and H. M. Vernon.
23 Function of Lipoids in Vital Processes. H. M. Vernon.
24 Estimation of Urea in Urine. J. A. Milroy.
25 Production of Apnea. T. H. Milroy.
26 Animal Activities in Relation to Training. R. J. Anderson.

2. **Appendicitis.**—Richardson records the results in 619 cases of appendicitis submitted to operation. Of the so-called "interval" cases, in which there had been one or more attacks of appendicitis and in which the operations were performed while there was no active inflammation, there were 113 cases and no deaths. This does not include any cases in which the appendix was removed in the course of an abdominal section performed for some other condition, merely because it was an appendix. Such removal of the appendix does not appear to Richardson to be either a wise or justifiable procedure. The appendix was removed in sixty-three early cases in which the inflammation was confined to the appendix itself. No drainage of the wound was necessary. There were no deaths. Of later cases there were ninety-three in which there was localized peritonitis and two deaths. In all of these cases the appendix was removed and drainage of the wound was necessary.

There were 274 cases in which the abscess was localized. In all these the appendix was removed and the wound drained. Cases in which the abscess was localized and was drained, the appendix not being removed, twenty-five; one death. These include some cases in which the abscess was bulging into the rectum and was opened per rectum; others in which, on account of the size of the swelling, it was not thought advisable to search for the appendix; and others in which, on account of the density of the adhesions, the same treatment was adopted. In all cases in which the appendix was gangrenous and had given rise to general septic peritonitis, without the formation of a local abscess, that is, "fulminating" cases, the appendix was removed and the wound drained. There were twenty-nine cases and twenty deaths. Similar cases, with the complication of an abscess, and in which the appendix was removed and the wound drained, numbered twenty, with fourteen deaths. Cases in which the patient was so ill that the peritoneal cavity alone was drained—two cases and two deaths.

By arranging the cases, according to this classification, it was found that there is a rise in the relative mortality which followed operations as they were performed during later stages of the disease. The method of operating which Richardson employs is by an oblique incision parallel to the crest of the ilium, and of such length as the case requires. In "interval" cases the incision is usually 4 or 5 in. long, and Richardson never employs the muscle-splitting method, because it requires one to operate in a hole without a sufficient view. In abscess cases he avoids, if possible, division of the epigastric vessels and opening of the sheath of the rectus muscle. The incision is extended into the flank, sometimes a long way, and this has the double advantage of giving an excellent view and of affording good drainage. He generally uses both a gauze and a rubber drain, which are brought out through the posterior extremity of the wound. The stump of the appendix is clamped, ligatured with catgut and tucked in with a catgut purse-string suture.

6. **Sterilization of Skin.**—Mercury perchlorid in methylated spirit (strength 1 in 500), Clarke says, is a more powerful

antiseptic than tincture of iodin, and has practically none of its disadvantages. It can be painted all over the penis, scrotum, anus, etc., and causes only a slight burning sensation when first applied. It can be freely used, and no local inflammation results as long as the spirit is allowed to evaporate. A small superficial burn, however, is caused by the spirit solution if a swab or towel soaked with it is left in contact with the patient's skin during the operation. This can easily be avoided. The perchlorid solution does not stain clothing or towels, and no irritating vapor is given off, as it dries on the skin. As an antiseptic the perchlorid solution is said to be very efficient, and no preparatory dressing of the skin is required before the operation. The actual sterilization of the skin is very simple. The skin is painted or swabbed over twice with spirit and perchlorid solution immediately before the commencement of the operation.

7. **Iodin as Dressing for Operation Wounds.**—In fifty cases Madden used iodin as the sole dressing for operation wounds according to Alcock method with very good results. These cases include six operations for ventral and umbilical hernia, many inguinal hernias (both single and double), several hydroceles, two complete removals of breast for cancer, four goiters, two epitheliomas of lip with removal of glands in the anterior triangle, four circumcisions, one hare-lip, trephining, amputations of legs, suprapubic lithotomy, plating of fractured tibia, plastic operations for cicatricial contractions after burns, and two partial amputations of the hand at the carpometacarpal joints for enchondroma and sarcoma. Only one case in the whole series has gone wrong, and that Madden ascribes to stupidity and neglect.

8. **Iodin as Sole Preparation and Dressing for Operation Wounds.**—Dalton has used iodin as the sole preparation and dressing for operation wounds in seventy-seven clean cases. His method is as follows: (a) The evening before operation: (1) Shave the operation area; (2) hot bath and thorough drying afterwards; (3) paint the operation area with tincture of iodin. (b) At the operation: (1) Paint operation area with tincture of iodin immediately before making the incision; (2) paint the wound again after insertion of stitches. (c) After-treatment: (1) Paint wound with iodin on second day after operation; (2) paint again on ninth day, after removal of the stitches. So far the results in all his cases have been uniformly excellent, and he has yet to see a stitch abscess. The only objection he has seen to the method up to the present is, that in cases where a space is left in the tissues by the removal of a tumor, this space is apt to fill up with serum, which would not happen with a firmly-applied dressing and bandage. This happened in three cases of hernia and one of removal of a fibroid tumor from the great trochanter in this series of cases. It was a matter of no moment. A probe was passed through the wound, the serum let out, and the wound again painted with iodin.

Lancet, London

September 28, II, No. 4648, pp. 865-926

27 Dust and Fume, Foes of Industrial Life. T. Oliver.
28 *Etiology of Dementia Paralytica. W. F. Robertson.
29 Amputation in Infantile Paralysis. E. M. Corner and C. E. Bashall.
30 Earlier Stages in Development of Pituitary Body. J. E. Frazer.
31 Acute Colliquative Necrosis of Spleen. G. W. Watson and M. J. Stewart.
32 Acute Irreducible Intussusception in Child Aged Six Months; Resection; Recovery. G. S. Hughes.
33 Record of Treatment of Bacterial Infections by Autogenous Vaccines. T. B. Scott and G. B. Scott.
34 Fracture of Cervical Spine; Operation; Necropsy. A. Don.
35 Melanotic Sarcoma Treated with Coley's Fluid. H. H. Greenwood.
36 Case of a Swallowed Fork. R. W. Willcocks.

28. **Etiology of Dementia Paralytica.**—For the past ten years Robertson has made a special study of the question of the etiology of dementia paralytica and tabes dorsalis. He has tried to establish an etiologic relationship for an organism which he terms the *Bacillus paralyticans*. He says that if hemoglobin agar is used as the culture medium, it can be shown that the *Bacillus paralyticans* is constantly present in the genito-urinary tract and the nasal mucosa of the general paralytic. In tabes dorsalis there is always in the early stages an infection of the genito-urinary tract by a similar microorganism; in the later stages this bacillus may be entirely displaced by a coliform one. The nasal infection in general paralysis can be traced along the lymphatics, through the base of the skull, to the intracranial lymphatic system, and a culture of the bacillus can be obtained from the cerebrospinal fluid in a considerable, though certainly not a very large, proportion of cases. Intraspinal injection of living cultures of the *Bacillus paralyticans* in rabbits has produced lesions in the cord identical with those that occur in the brain of the general paralytic. This organism is classed as a diphtheroid bacillus and yet it is said not to be a bacterium at all, but phases in the life cycle of a protozoon. Robertson says he has cultural evidence in support of this view.

There is a special feature of the brain in cases of dementia paralytica that Robertson has had under observation for the last fifteen years; its meaning was inexplicable until other facts suggested that the *Bacillus paralyticans* is only a stage in a life-cycle. This feature consists in an accumulation of very minute bodies, sometimes rod-shaped but generally quite irregular in form, in the lymphatic spaces around the vessels and nerve cells of the cerebral cortex. These bodies are quite invisible in sections stained by the ordinary methods; they are clearly revealed only by the palladium methyl-violet method. Robertson has observed them in a very large number of brains, but only in those of general paralytics. They are very minute, being as a rule much smaller than a staphylococcus, though larger forms also occur. When closely examined they are seen to consist of a deeply-stained central particle and a comparatively very pale surrounding portion. They have, in short, the morphologic characters of amebulas.

Another body which in Robertson's experience is special to the brain of the general paralytic, and which is probably of a parasitic nature, is a very minute delicate rod which is revealed also by the palladium methyl-violet method. Though it occurs throughout the cerebral tissues, it is most easily recognized within the cytoplasm of the nerve cell, where there are no neuroglia fibers and axis-cylinders to complicate the picture. Two or three such rods may commonly be seen in one cell. They are perfectly smooth, and therefore differ morphologically from the granular diphtheroid bacilli. They have also been found in the cerebrospinal fluid.

In view of the results of the bacteriologic and experimental investigations, it has seemed legitimate to endeavor to cure these diseases by means of vaccines and antiserum. In tabes dorsalis, especially in early cases, the results of vaccine treatment have in many instances been highly satisfactory. The gait has become steadier, pain has been relieved, the patient's general health has improved, and he has been able to resume work. It has only been in very advanced cases, and in the thin, neurasthenic type of patient, that the results have been in the least discouraging. In general paralysis, on the other hand, the most that Robertson claims is that in a few cases there has apparently been some retardation of the rate of progress of the malady. The antiserum which he has employed has been prepared in the sheep. Given by hypodermic injection, this antiserum has produced at most only slight and very temporary beneficial effects. Given by intraspinal injection, it has, however, yielded some very striking results. Robertson has treated one patient with tabes dorsalis by intraspinal injection of antiserum. The case was that of a young man in whom the disease was progressing rapidly. Following a series of three intraspinal injections of antiserum, there has been a complete arrest of the further progress of the malady, and the patient after nearly a year remains in this satisfactory condition. In several of these cases of dementia paralytica recently treated with fresh antiserum very marked improvement has already been reported.

Medical Press and Circular, London

September 18, XCIV, No. 3828, pp. 295-316

37 *Infectious Disease Characterized by Jaundice and a Meningeal Syndrome. G. Guillain.
38 Migration of Cecum Producing Obstruction of Ascending Colon. J. Bland-Sutton and S. Hastings.
39 Causes of Failure of Roentgenization in Deep-Seated Cancer. F. Hernaman-Johnson.
40 Vacuum Electrode in Nevrodermite. J. G. Tomkinson.

41 Preliminary Laryngotomy in Operations on Tongue. G. P. Newbolt.

September 25, XCIV, No. 3829, pp. 317-342

42 Syphilis of Nervous System, Illustrated by Three Cases. H. L. McKisack.
43 Some Rarer Forms of Breast Cancer. W. S. Handley.
44 Inflammatory Tuberculosis with Neoplastic Tendencies: Adenoma of Breast, Tuberculous Lipoma, Cold Abscess, Lumbar and Thoracic Pulmonary Tuberculosis. A. Poncet.
45 Syphilis. D. Sommerville.
46 Acute Perforation of Stomach. J. H. Watson.

37. **Infectious Disease.**—Guillain again calls attention to the fact that there seems to exist among the benign forms of meningitis a special clinical type which deserves to be individualized; this is characterized by the association of a meningeal syndrome and an icteric syndrome. The infection which produces the icterus with meningeal syndrome would seem to be a septicemia. This septicemia may affect the heart, the lungs or the adrenals, but it specially determines hepatic and meningeal troubles, troubles apparently serious, but which, in every case hitherto recognized, have terminated in recovery. Apparently, this icterus with a meningeal syndrome may be cured without medicaments. Lumbar puncture is useful for diminishing the hypertension of the cerebrospinal fluid, for removing a fluid which is surely injurious to the neural axis and for modifying the meningeal circulation. It is, however, useless to give a patient too many drugs, for "icterus with a meningeal syndrome" habitually tends to a spontaneous cure.

Clinical Journal, London

August 28, XL, No. 21, pp. 321-336

47 Sphygmomanometer in General Practice. F. de H. Hall.

September 4, XL, No. 22, pp. 337-352

48 Diagnostic Value of Sensory Changes in Diseases of Nervous System. H. Head.
49 Acute Poliomyelitis. A. Saunders.

September 11, XL, No. 23, pp. 353-368

50 Synovitis of Knee-Joint. W. M. Eccles.
51 Diagnostic Value of Sensory Changes in Diseases of Nervous System. H. Head.

September 18, XL, No. 24, pp. 369-384

52 Diagnostic Value of Sensory Changes in Diseases of Nervous System. H. Head.

September 25, XL, No. 25, pp. 385-400

53 Diagnosis and Treatment of Mitral Disease. F. W. Price.
54 *Aching Throat. W. H. Kelson.
55 Diagnostic Value of Sensory Changes in Diseases of Nervous System. H. Head.

54. **Aching Throat.**—In Kelson's experience aching throat is more commonly associated with flatulent dyspepsia than anything else. This seems to act either by the formation of toxins, or possibly the aching may be a referred pain such as that which occurs in the ear so commonly in disease of the larynx and upper part of the esophagus. There may also, however, be local conditions, which, if they do not actually cause, certainly accentuate, and must be sought out and dealt with in obstinate cases, not forgetting that the condition of the nose and accessory sinuses has a very distinct bearing on the state of the pharynx, as also have the teeth. In order to relieve the dyspepsia, first of all the teeth must be examined and the patient referred to a good dentist if necessary. The diet must be inquired into and corrected. As regards alcohol, it certainly seems in some cases to bring on and in others to aggravate the aching, and on the whole, these patients are better without it. Kelson knows of several cases in which washing out the stomach has completely relieved the aching, and considers it a most valuable form of treatment if not carried to excess.

Among the drugs which have proved most useful, gentian, calumba, strychnin, bicarbonate of soda, bismuth, magnesia and charcoal are the principal. Constipation is very common and very troublesome, and if not relieved by careful dieting, the best drugs to use are cascara, podophyllum and sulphur, also small doses of mercury followed by a saline aperient are valuable. As a means of giving temporary relief massage is useful, and so is the galvanic current, but as permanent curative agents both are disappointing. Smoking, if in excess, must be forbidden, but Kelson has not been able to convince himself that moderate smoking was in itself a cause of aching throat, and certainly many women suffer from it who do not smoke at all, and one finds a good many patients who are anxious to get well and willingly abstain entirely from both tobacco and alcohol, and yet the pain continues.

Annales de Médecine et Chirurgie Infantiles, Paris

September 1, XVI, No. 17, pp. 513-544

56 Alleged Pathognomonic Symptoms of Eruptive Fevers. M. Perrin.
57 *Treatment of Nevi. F. de Courmelles.

September 15, No. 18, pp. 545-576

58 Bacteriology of Noma. A. Zuber and P. Petit.
59 *Excessive Menstrual Hemorrhage at Puberty. E. Weil.

57. **Nevi.**—De Courmelles says that nevi may now be regarded as readily curable, especially by radium. He has had extensive and prolonged experience with this method and regards it as superior to all others. He generally applies the radium for two hours at least and up to six or eight hours at a time, day after day, for about a week.

59. **Excessive Menstrual Hemorrhage at Puberty.**—Weil is convinced that in many cases this tendency is a manifestation of constitutional inferiority from defective functioning of one or more of the ductless glands. Consequently menorrhagia at puberty should compel careful examination for possible disturbance in these glands and appropriate organotherapy. He reports the cases of nine girls with excessive menstrual hemorrhage at or near puberty, with much anemia but no local findings on palpation through the rectum and no functional genital disturbances, but with associated hemorrhages, epistaxis, purpura, etc., and a history of hemorrhages preceding menstruation; the mothers stated that they had had the same troubles. The coagulating power of the blood was reduced, and four of the girls were unusually small for their age, and three obese, one of the latter being exceptionally large. The hemorrhage in such cases must be combated by general measures; operative measures are useless and dangerous. The first thing is to check the hemorrhage, and this Weil accomplishes by local application of fresh normal blood-serum, in vaginal douches or enemas, and subcutaneous injection of the same; 20 c.c. may prove sufficient or the injection may have to be repeated every month or twice a month. This serotherapy must be supplemented by the appropriate organotherapy. In his cases, thyroid extract in small doses seemed to improve the general condition, accelerating growth or reducing obesity—all tending to restore the physiologic balance in the ductless glands and thus arresting the tendency to excessive hemorrhage. Otherwise it may persist until the menopause. [Weil's previous work on serum treatment of hemophilia was summarized in THE JOURNAL, April 18, 1908, p. 1311, and there have been numerous other communications on the subject, such as Rugh's "Thyroid in Hemophilia," April 1, 1911, p. 988; Welch, July 2, 1910, p. 83; Trembur, Jan. 1, 1910, p. 86. Rabbit-, horse- or human serum may be used, or diphtheria antitoxin.]

Archives Générales de Médecine, Paris

July, XCI, No. 7, pp. 581-672

60 The Seashore in Prophylaxis of Pulmonary Tuberculosis F. Lalesque.

August, No. 8, pp. 677-760

61 *The Heart as Factor in Hemoptysis. (Les hémoptysies phtisicardiaques.) C. Sabourin.
62 Hay-Fever and Allied Conditions and the Gouty Diathesis. (Les coryzas spasmodiques et le terrain arthritique.) Dardel.

61. **The Heart as Factor in Hemoptysis.**—Sabourin ascribes the local congestion, which generally precedes the hemoptysis, to some circulatory disturbance, some valvular affection or neurovascular trouble. The tuberculous often have inherited or acquired taints of the kind; he estimates the proportion at 40 or 50 per cent. who have some cardiac affection alone or associated with more or less cyanotic angioneuroses in the hands or feet. As a rule, these circulatory disturbances date from childhood but cause no appreciable symptoms until tuberculosis is installed. Then the anomaly in the cardiovascular system manifests itself functionally, at least, and these disturbances persist or subside with the tuberculosis. The general treatment of the tuberculosis must be guided by the knowledge of the cardiovascular disturbance and the patient warned to avoid conditions liable to induce local congestion. With any taint of the kind the physician should forbid an altitude over 1,800 feet and places where there is liable to be excitement. The tuberculous who spit a little blood morning or night and none the rest of the day, almost always have

some circulatory trouble. Let them drink water and live on a vegetarian diet, and nine out of ten will lose the last trace of blood in forty-eight hours. Forced feeding is injurious for the tuberculous with a cardiac taint; they should abstain from tobacco, alcohol and coffee, and drink as little as possible with their meals to prevent distention of the stomach and its injurious action on the heart. When the patients once realize the benefit from these rules, they apply them habitually, eating little meat, masticating with special care and drinking water only between meals. Sabourin has often found that restricting the diet had a marked beneficial effect on the general health and especially on the tendency to hemorrhage. Some patients required complete abstention from meat and others had to live for weeks on bread and milk alone to control the tendency to hemoptysis. Their tuberculous process once healed over, most of these patients can return to the ordinary diet, keeping within bounds. It is unwise to order exercise for a febrile tuberculous patient with a circulatory taint. The intoxication from muscle waste enhances the tendency to fever. Sabourin has encountered many tuberculous patients presenting more or less marked symptoms of hyperthyroidism, up to actual exophthalmic goiter. As their tuberculous process healed over, the exophthalmic goiter subsided more or less completely and all were able to resume an active life. Among the factors contributing to these results he mentions the prolonged administration to patients with a tendency to severe angioneurotic disturbances of moderate doses of the fluid extracts, mixed, of hamamelis, hydrastis and viburnum. This proved particularly useful when the general circulatory disturbances were accompanied by menstrual disturbances.

Archives des Maladies de l'App. Digestif, Paris

VI, No. 8, pp. 421-480

63 *Unusual Forms of Gastric Cancer. E. Rousseau. To be continued.
64 *Diagnostic Importance of Antitrypsin Test for Cancer. J. C. Roux and R. Savignac.

63. **Unusual Forms of Gastric Cancer.**—Rousseau's study of this subject is based on 526 cases of gastric cancer in Mathieu's service and 150 cases published from Johns Hopkins Hospital (1900). He classifies the unusual cancers as those with complications overshadowing the true disease, those with predominant mechanical disturbances, those with a single symptom, those with an exceptional course and, lastly, those occurring under unusual conditions of the soil as in the very young or very old, in pregnancy or associated with another cancer. In the first class, anemia of the simple or pernicious type, edema or anasarca may be for a time the only manifestation of a gastric cancer. A latent gastric cancer may exceptionally induce fever without other cause to explain it, even at necropsy. When ascites develops with much impairment of the general health, it should be borne in mind that ascites frequently accompanies malignant linitis, diffuse infiltration of the stomach walls with consequent retraction. After having excluded tuberculous and simple chronic peritonitis, that of cancer origin should be sought for. Nodular cancer of the liver being generally secondary, the stomach should be examined for the probable primary lesion in the stomach. Jaundice from compression of the liver or bile ducts was noted in 2 per cent. of the material analyzed; secondary involvement of the liver in 6.5 per cent. of 526 cases and in 15 per cent. of 150. Obstinate diarrhea or signs of obstruction of the intestines may be the predominant sign of a gastric cancer, or fecaloid vomiting or symptoms on the part of the rectum alone. The diarrhea may occur without actual involvement of the intestine. Insufflation of the stomach or of the rectum may reveal a gastrocolic fistula; radioscopy is almost always useful. By excluding ulcer, tuberculosis and ordinary inflammatory processes, the diagnosis of cancer is reached. Metastasis in the intestines is frequently multiple. The discovery of cancer in the bowel should lead to search for the primary growth in the stomach the same as, with a gastric cancer, search should be made for intestinal metastases. If severe diarrhea keeps up, with increased debility and no fistula, if no tumor or other lesion in the bowel can be found and the stools show lack of gastric digestion, cancer of the stomach is probable.

64. **Antitrypsin Test.**—Roux and Savignac have applied the antitrypsin test in 125 cases, including fifty-three reported two years ago and traced to date. They tabulate the details of the entire number. In only one of the total 125 cases was a cancer found with a normal antitrypsin index, and in this case no microscopic examination was made of the inoperable tumor found in the pylorus region. An abnormally high antitrypsin index is strong presumptive evidence of malignant disease, particularly when associated with symptoms suggesting possible cancer. The later history of the fifty-three patients tested two years ago has corroborated the findings with the test then. Those with an index below 1:4 are still free from signs of cancer (with the exception of the one patient mentioned above), while those with an index of 1:4 and over have all succumbed to the progress of their malignant disease. The milk casein technic was used for the test, as described in their previous communication, summarized in THE JOURNAL, March 4, 1911, p. 701.

Archives de Médecine des Enfants, Paris

September, XV, No. 9, pp. 641-720

65 Desiccated Milk in Infant-Feeding. (Le lait sec dans l'alimentation des nourrissons.) E. C. Aviragnet, L. B. Michel and H. Dorlecourt.
66 Day Nurseries. (Crèches et pouponnières.) P. Nobécourt.
67 *Advantages of Subcutaneous Elastic Ligature in Treatment of Umbilical Hernia in Children. V. Brun.
68 Epileptoid Convulsions as Only Signs of Adenoids. G. Pignero.
69 Nervous Anorexia in Infants. J. Comby.

67. **Umbilical Hernia in Children.**—Brun expatiates on the ease, harmlessness and effectual outcome of the method which Nota of Turin has applied since 1890 to 244 children from 2 months to 9 years old. The earlier it is done the smaller the hernia and the better the outcome. An elastic cord 30 or 40 cm. long is passed around the base of the hernia with a long curved needle worked through horizontally under the skin. The hernia is then reduced and held in place with the finger while the elastic cord is drawn tight until the opening is entirely obliterated. The ends of the cord are then held with a clamp and tied with silk close to the skin and cut off, leaving only the short ends protruding. The cord is drawn taut by an assistant while the reduced hernia is controlled by the operator. In the course of a few days the rubber cord gradually cuts through the soft tissues in its grasp, the tissues growing together in its wake, thus solidly closing the opening. After twelve or fifteen days the entire cord comes out through the hole in the skin where the ends protrude, and a thick solid cicatrix is left around and on top of the old hernia opening. The dressings are not disturbed for ten days; then a new dry dressing is applied, and it is wise to have the child wear a simple cloth binder around the abdomen for two or three months afterward. The elastic cord is sterilized by soaking for an hour in 70 per cent. alcohol containing 1.5 per cent. glacial acetic acid. No complications of any kind were ever observed, and the abdominal wall gradually becomes smooth and supple. Recurrence was observed in only one case, a young infant with hernia 5 cm. in diameter. The hernia recurred during an attack of coughing, but was radically cured six months later by repetition of the procedure. General anesthesia is not required for infants; for older children Nota introduces the cord under a few whiffs of ethyl chlorid, the child coming to at once after the little operation which never takes over six minutes, and the children are allowed to be taken home if kept quiet.

Presse Médicale, Paris

September 14, XX, No. 75, pp. 757-764

70 Streptococcus Complications with Erysipelas. (Streptococcémie, pyohémie et endocardite végétante à streptocoques dans l'érysipèle de la face.) M. Lesné, Françon and Gerard.
71 *Operation on Intercostal Nerves for Tabetic Gastric Crises. (Operation de Franke.) G. Mouriquand and G. Cotte.

71. **Operative Treatment of Gastric Crises.**—Mouriquand and Cotte report a case in which they applied Franke's method of tearing the intercostal nerves in treatment of gastric crises in a tabetic of 39. They tore merely five nerves, from the seventh to the eleventh intercostal nerves inclusive, and they think that this is not enough as the patient already shows

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signs of recurrence of trouble. The operation put an end completely to the gastric pains, but it did not influence the lightning pains and bladder crises. The case teaches the necessity for making the operation more extensive, including from the fifth to the twelfth intercostal nerves and possibly the first two lumbar nerves. With the Franke and Förster technics there is nothing to prevent regeneration of the nerves, and it seems logical that the functioning of the ganglion should be suppressed as the only certain means to ward off recurrence. If the Franke technic can thus be improved while retaining its comparatively harmless character it will represent a great advance. (The technic for it was described in THE JOURNAL, Feb. 10, 1912, p. 446, and May 4, 1912, p. 1402.)

Revue de Médecine, Paris

July, XXXII, No. 7, pp. 505-584

72 Action on Blood of "Metal Ferments." J. J. Manoukhine and others.
73 Fever in Prodrome of Leprosy. G. Barbezieux.

August, No. 8, pp. 585-672

74 Syphilis and Dilatation of the Bronchi. L. Bouchut and Dujol.
75 *Latent Meningitis in Second Stage of Syphilis. (Méningopathies syphilitiques secondaires cliniquement latentes.) E. Jeanselme and P. Chevallier. Commenced in No. 5.
76 Symptoms of Hyperthyroidism Following Use of Iodin During a Gynecologic Operation. L. Lépine.

75. Latent Meningeal Disturbances in Secondary Syphilis.—Jeanselme and Chevallier recommend Nageotte's counting chamber for demonstrating lymphocytosis in the spinal fluid, claiming that it shows a lesser degree of lymphocytosis than other methods; that it takes only a fourth as much time and distinguishes the small and medium-sized lymphocytes, and whether or not they are surrounded by protoplasm, medium and large mononuclear cells, plasma cells, basophils, vacuolated cells, eosinophils and polynuclears. The spinal fluid is negative in the first stage of syphilis, positive in a large majority of cases in the secondary stage, and in a much smaller percentage in the tertiary. In doubtful cases of syphilis, the diagnostic value of lumbar puncture is very great. The meningeal affections of the secondary period may not show any symptoms even when there is a considerable lymphocytosis, or there may be a continuous headache, periodically increased in intensity generally in the evening. It is frequently relieved by lying down with the head lowered, or by lumbar puncture (patients often ask for this every day), and especially by potassium iodid. The patients are capable of doing as much muscular work as before but they are so preoccupied with their illness that they take no interest in their surroundings and go about with vacant gaze and expressionless face. This psychasthenia is sometimes associated with evening headache or intense pain in the neck or in the dorsolumbar region, sometimes accompanied by contracture of muscles during the paroxysms, and radiating to the thorax or abdomen. Other symptoms are fleeting paresthesias and a feeling of heaviness in the limbs, buzzing in the ears, abolition of the knee reflex and sluggishness of the eye reflexes. They consider the number of cells in the spinal fluid of much greater importance than the kind. There are more apt to be plasma cells in cases with high lymphocytosis. The development of gummata in the tertiary period or of tabes and general paralysis seems to depend on whether the meningeal affections of the secondary period were circumscribed or diffuse. The severity of the mucous and cutaneous eruptions and of the lymphocytosis do not correspond. A secondary syphilis with no eruption at all may show a marked lymphocytosis, and this is so often true that the physician should be sure the spinal fluid is negative before giving up treatment. In more than half the cases, skin eruptions and mucous patches were accompanied by a slight lymphocytosis, more rarely by a moderate lymphocytosis with plasma cells. The latter are much more resistant to treatment. The eruption that is prolonged or late in developing and the longer macular eruptions are frequently accompanied by a marked meningeal reaction. Hypertrophic vulvar syphilids are accompanied in two-thirds of the cases by pronounced lymphocytosis. In any case of eruption the meninges are apt to be affected to some extent. But the condition of the meninges is not dependent on that of the skin, and can be determined only by lumbar puncture. The lymphocytosis is much more resistant to treatment than the cutaneous and mucous eruptions. When present it indicates more energetic mercurial treatment. It has been affirmed that salvarsan causes a secondary meningitis, but Jeanselme and Chevallier's experience has been that it tends to cure it.

Archiv für Gynäkologie, Berlin

XCVIII, No. 1, pp. 1-220

77 Cancer in Uterine Corpus Polyp. A. v. Winiwarter.
78 Treatment of Abortion; 1,012 Cases. (Zur Behandlung der Fehlgeburten.) R. Patek.
79 Dangers of Intraperitoneal and Extraperitoneal Infection. K. Baisch.
80 Cystic Placenta. (Subchoriale Cysten der Placenta.) W. G. Balowsky.
81 Normal and Pathologic Anatomy of the Endometrium. R. Schröder.
82 The Blood During Pregnancy. (Blutuntersuchungen bei Schwangeren, mit bes. Berücksichtigung der Aetiologie der Schwangerschaftsniere und Eklampsie.) M. Doi.
83 Fats and Lipoids in the Placenta. G. Ballerini.
84 Prophylaxis of Gonorrhea of the Newly Born. (Zur Vorbeugung der Blenorrhoea neonatorum in Stadt und Land.) O. v. Herff.

Beiträge zur klinischen Chirurgie, Tübingen

September, LXXX, No. 1, pp. 1-189

85 *Acute Osteomyelitis of Pelvis and Sacrum. (Die akute Osteomyelitis des Beckens und Kreuzbeins.) P. Klemm.
86 *Chronic Form of Osteomyelitis with Sclerosis. P. Klemm.
87 *Goiter and Pregnancy. (Struma und Schwangerschaft.) B. v. Beck.
88 *Bone Grafts in Treatment of Pseudarthrosis. L. Stuckey.
89 The Bacteria Found in Aseptic Operations. L. Dreyer and F. Nothmann.
90 Diverticulum Formation in Appendicitis. M. Krabbel.
91 Complications After Operations on the Thorax. M. Tiegel.
92 *Conservative Treatment of Tuberculous Glands in the Neck. (Tuberkulöse Halslymphdrüsen.) T. v. Mutschenbacher.
93 *Combination General and Local Anesthesia. (Ueber die Verbindung der Lokalanästhesie mit der Narkose; über hohe Extraduralanästhesie und epidurale Injektionen anästhesierender Lösungen bei tabischen Magenkrisen.) A. Läwen.

85. Acute Osteomyelitis of Pelvis, Sacrum or Spine.—Klemm found staphylococci in 70.3 per cent. of 243 cases in which bacteriologic examination was made, out of a total of 269 cases of osteomyelitis. In twenty-six cases the affection was in the ileum; the germs were found in the blood in some of the cases but only five of these patients died. The sacrum was the site of the lesion in six cases; he could find only eleven cases in the literature in which the sacrum alone was involved. Treatment of all forms of osteomyelitis of the pelvis consists in the most radical removal of all diseased bone tissue. Some of his cases teach anew that an operation may yet be in time when the general infection is not far advanced even although the whole of the spongiosa of the sacrum may be the seat of diffuse purulent infiltration and with strips of softening in the compact bone tissue. The diagnosis frequently wavers between acute articular rheumatism, typhoid and tuberculosis. Dislocation testifies more for osteomyelitis, so that this is more probable when the limb is shorter on account of a luxation.

86. Chronic Osteomyelitis with Sclerosis.—Klemm reviews seventeen cases of osteomyelitis with an unusual course; the trouble began like an acute osteomyelitis but the symptoms soon subsided. This deceptive lull persisted for years or there were periodical febrile exacerbations or constant severe neuralgic pain. An abscess was generally found toward the end of the long bone, with sclerosis in the vicinity. In some cases there were several abscesses. In some the contents were more serous-mucous than actual pus. Notwithstanding the subsidence of the acute symptoms, the nutritional disturbances in the bone continued a progressive course. The result in some cases was an acceleration of growth. In one of Klemm's cases the diseased limb was over 3 inches longer than its mate, and the bone grew larger in circumference throughout or in parts. In a few of the cases the onset was more insidious, and it was difficult to decide between tuberculosis, syphilis, sarcoma or simple osteomyelitis. It is possible that in some of the cases of recovery after mere curetting of a supposed sarcoma, the trouble was really merely an osteomyelitis. The discovery of pyogenic germs and a history of slight acute febrile exacerbations suggest the latter. After years of supposed cure the process is liable to flare up into an acute severe phase.

87. **Goiter and Pregnancy.**—Beck did not notice any disturbance from the goiter in 670 cases in parturients or at most a suggestion of thyroid toxins in the first half of the pregnancy. In sixty other cases the goiter increased in size soon after the childbirth and caused symptoms and the thyroid was removed. He had 420 other patients apply for relief from thyroid symptoms in the course of their pregnancy. In 260 in this group there had been preceding symptoms of hyperthyroidism and these increased in intensity about the end of the second month, but under sodium phosphate the symptoms gradually mitigated and by the end of the fifth month the signs of thyroid hyperfunctioning subsided except in five of the ten cases of pronounced exophthalmic goiter. In one case a woman of 25 with a goiter for seven years had half of the goiter removed and two years later, becoming pregnant for the third time, tetany developed, and the part of the goiter left was causing suffocation. The patient was cured by an emergency tracheotomy, strumectomy, implantation of pig parathyroid, and when this proved inadequate, implantation of thyroid tissue from another patient, followed by interruption of the pregnancy. His experience warns that no operative measures should be attempted, not even artificial delivery, in severe exophthalmic goiter with persisting thymus. The treatment can only be internal and directed against the thyrotoxicosis.

88. **Bone Grafts for Pseudarthrosis.**—Stuckey reviews what has been done in this line, and the encouraging results obtained in ten cases at the Obuchow hospital at St. Petersburg, after failure of conservative measures including systematic knocking on the pseudarthrosis with the percussion hammer. Excellent results were obtained with these conservative measures alone in some old inveterate cases. The preferable technic is a free graft of a wedge of bone taken from the patient or an amputated limb, with the periosteum intact and the marrow canal exposed.

92. **Conservative Treatment of Tuberculous Glands in the Neck.**—Mutschenbacher's conclusions are based on 1,344 cases of tuberculous glands in the neck in his service at Budapest during the last four years. He declares that treatment should be absolutely conservative or else extremely radical. A systematic course of conservative measures improves conditions for operative treatment if such is necessary. They include dieting, iron, arsenic and exposure to the sunlight, the aspiration of the contents of the abscess through the smallest possible needle, and a small amount of iodoformed glycerin (5 c.c. at most) is injected. The aspiration is repeated every third or fourth day and the cure is generally complete by the fifth or sixth puncture, with no scar left. Except with severe complicating tuberculous processes elsewhere, the cure was generally complete under these conservative measures as he shows by a few of the more remarkable case histories.

93. **Varied Technics for General Anesthesia.**—Läwen expatiates on the importance of reducing the amount of the anesthetic inhaled, as by doing this we eliminate the principal factor in the post-operative complications on the part of the respiratory apparatus. By combining local anesthesia with a minimal inhalation anesthesia or with spinal anesthesia superior ultimate results are obtained. The vitality is not lowered so much and the patient leaves the table in much better condition than when the entire dependence has been on inhalation of the anesthetic. Läwen has experimented with various combinations of different methods of anesthesia, and with high epidural injections in treatment of the gastric crises of tabes. In the one case described epidural injection of 50 c.c. of a 1 per cent. novocain-sodium bicarbonate solution, raising the pelvis afterward, arrested the pain, but did not stop the vomiting and symptoms of severe intoxication followed. The central nervous system of a tabetic seems to be more sensitive to novocain when it is rapidly absorbed than the brain of a normal individual. Consequently this epidural method is too dangerous for tabetics. For operations, the method did not give deep enough anesthesia, and he was disagreeably surprised by the extent of the hemorrhage when he tried Schlimpert's technic of extradural injection of novocain in combination with scopolamin and raising the pelvis. This capillary hemorrhage under this technic was particularly severe with hernia operations; in one case after amputation of the thigh the stump bled like a sponge from the smaller vessels, so freely that the hemorrhage was arrested only with the greatest difficulty. Anesthetics injected in this way have the disadvantages of delay and uncertainty of action. Far better is a combination of direct local anesthesia followed by minimal inhalation anesthesia. He gives 0.01 gm. morphin half an hour before the operation, then anesthetizes the abdominal wall by the infiltration method. While waiting for this to take effect, the operator completes his own preparation for the operation, and the field is then sterilized by painting with ether, alcohol and tincture of iodin. By this time the patient is ready for the ether and very little is required. Whatever method of anesthesia is employed, Läwen recommends preliminary anesthetization of the abdominal walls; even this alone will prove a great help in reducing the amount of ether required. He has been experimenting with drugs to promote the relaxation of the abdominal walls to permit coaptation, but he knows of none that will produce this effect on local application. Klapp's method of reducing the amount of anesthetic needed by shutting off the limbs from the circulation, damming the blood in them, leaves the organs in the trunk exposed to a strong concentration of the anesthetic while the rest of the blood is shut off. Hence the heart and respiratory organs are liable to suffer just as much as with the ordinary technics.

Berliner klinische Wochenschrift

September 9, XLIX, No. 37, pp. 1733-1780

94 *Epinephrin in Treatment of Certain Disturbances of the Artificial Menopause. (Die sogenannten Ausfallserscheinungen.) A. Martin.
95 *Importance of Extragenital Factors in Gynecologic Disturbances. L. Landau.
96 *Operative Treatment of Uterine Hemorrhage. A. Dührssen.
97 *Uterine Hemorrhage. (Indikationen bei Uterusblutungen.) A. Mackenrodt.
98 *Treatment of Perforation of Uterus Walls. W. Sigwart.
99 *Toxicity of Blood in Abdominal Cavity. (Giftigkeit des in die freie Bauchhöhle ergossenen Blutes.) P. Bröse.
100 *Amenorrhea and Gynecology. T. Landau.
101 *Treatment of Myoma. (Zur Röntgen- und operativen Behandlung der Myome.) L. Blumreich.
102 "Menstruating Fistulas." A. Hirschberg.
103 Roentgenotherapy in Gynecology. P. Sippel.
104 *Operative Treatment of Double Uterus and Vagina. (Operative Vereinigung bei sogen. Verdoppelung des Genitalkanales und bei Verschluss einer Hälfte.) P. Strassmann.
105 *Vaginal Hysterectomy. W. Nagel.
106 The Urogenital Trigonum from the Surgical Standpoint. W. Liepmann.
107 Operation for Pendulous Abdomen. (Zur Technik der Fettbauchoperation.) R. Jolly.
108 Favorable Influence on Pregnancy Nephritis from Death of the Fetus. (Einfluss des Absterbens der Frucht auf die Schwangerschaftsnephritis.) Molinari.
109 *Severe Pregnancy Toxicoses. R. Freund.
110 Pulmonary Tuberculosis and Pregnancy. H. v. Bardeleben.
111 Treatment of Sterility. (Zur Deutung und Behandlung der Unfruchtbarkeit des Weibes.) W. Bokelmann.
112 *Puerperal Eclampsia Without Convulsions. S. Gottschalk.
113 Stroganoff's Prophylactic Method of Treating Eclampsia. Voigts.
114 Indications for Cesarean Section. (Zur Indikation des extra- und intraperitonealen Kaiserschnitts auf Grund von 37 Fällen.) F. Gutzmann.
115 Tumors Complicating Childbirth. (Schwangerschaft, Geburt und Wochenbett, kompliziert durch Genitaltumoren.) E. Runge.

94. **Epinephrin in Climacteric Disturbances.**—Martin states that among the symptoms ascribed to deficiency of the internal secretion of the ovaries in the natural or artificial menopause, the blood-pressure may be abnormally high or abnormally low. In the abnormally low cases he has been gratified with the result of systematic administration of epinephrin, a few drops of a 1/1,000 solution from one to three times a day for from one to four months. The eleven women thus treated found themselves much improved, the heart action growing stronger and the depression, headache and tendency to insomnia subsiding while the remedy was being taken. No cumulative action was evident and the stomach did not seem to be affected. Three other women did not complete the course, one on account of gastric disturbance, the others because they felt so much improved after three weeks that they stopped the medicine.

95. **Gynecologic Findings Liable to Be Overestimated.**—Landau warns that the gynecologic findings are not always responsible for the symptoms observed. Even when there is apparently serious trouble in the genital organs, it may be

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clinically latent and the symptoms be the result of some general or local affection elsewhere. When a pus tube is walled off by adhesions it may not cause half as much disturbance as a minute inflammatory process in a tube not walled off. The unreliability of the insignificant local findings is particularly evident in a tubal pregnancy, while expectant treatment or curetting on account of the atypical bleeding observed, may have disastrous results. The fate of the patient may depend on whether the physician has heeded her statements as to suspension or delay of a few days of the last menstrual period. Properly heeded, this statement will suggest that the slight enlargement noticed on one side of the uterus may be a pregnant tube, and compel its removal at once. Gastroptosis, enteroptosis, hysteria, neuralgia in the iliac region, etc., may cause disturbance in the genital apparatus, but its functional nature should be recognized and the futility or absolute harmfulness of local measures be appreciated.

96-97. **Operative Treatment of Uterine Hemorrhage.**—Dührssen extols anew the advantages of vaginal cesarean section for uncontrollable uterine hemorrhage during delivery or post partum. By making the incision down over an inflated bag, "metreurynter section," the operation becomes so simple that it is within the reach of all. He says that the Russians have adopted the method extensively and cites numerous favorable statistics. During the first seven months of pregnancy, vaginal celiotomy or anterior colpohysterotomy or vaginal cesarean section, as the operation is variously called, does not require to be done over the inflated bag, but later, this is a valuable aid. He classifies the various indications and insists in conclusion that the modern obstetrician must be an up-to-date surgeon and gynecologic operator, skilled in vaginal operative methods. Dührssen's contention is that the general practitioner must not only think more surgically but be ready to act surgically, and that the vaginal route is along the line of least resistance while the results are equally good.

Mackenrodt states that in normal menstruation all parts of the uterine mucosa seem to participate in the process and in arrest of the hemorrhage, but in pathologic hemorrhage the fundus does not contract properly. Consequently this region keeps on bleeding when the hemorrhage elsewhere has been arrested. His treatment, therefore, of excessive uterine hemorrhage in young women is by slitting the uterus and excising the mucosa in the fundus; it is impossible to reach it effectually by curetting alone. This excision of part of the fundus mucosa has put an end to the pathologic hemorrhages in his cases and menstruation has resumed its normal course. His series includes cases of myoma of the fundus. The permanent success thus realized compels him to commend this enucleation of the fundus mucosa or amputation of the fundus, through a colpotomy, as a useful means of arresting a tendency to uterine hemorrhage in appropriate cases.

98. **Perforation of the Uterus.**—Sigwart reports six cases which show the advantages of simple expectant treatment with repose in case of perforation of the uterus when the injury has been recognized at once and further injury avoided. Under opium and bed rest the minute wound will heal readily, but if there is any question of secondary injury or contamination, immediate laparotomy is the only means to ascertain and correct conditions. As a rule there is no necessity for a mutilating operation. In the very serious cases even these are unable to save the patient.

99. **Toxicity of Blood in Abdominal Cavity.**—Bröse warns against the danger of absorption of toxic products from the decomposition of blood left in the abdominal cavity, to say nothing of the culture medium it affords for germs making their way into it from the intestines or circulating blood. He reports six cases to illustrate the picture of intoxication from this cause. When collapse, somnolency, rise of temperature, acceleration of the pulse and paralysis of the bowel are observed after an operation for tubal pregnancy or the like, the abdomen should be opened anew to remove every trace of blood.

100. **Amenorrhea and Gynecology.**—Landau declares that in the majority of cases the amenorrhea is due to constitutional causes, internal disease, or else it is of no moment; numbers of women who menstruate irregularly or not at all are free from all subjective or objective disturbances.

101. **Treatment of Uterine Myomas.**—Blumreich expatiates on the possibility of unsuspected cancer as the gravest objection to roentgenotherapy of uterine myomas, and adds that his last series of 153 operations for uterine myoma does not include a fatality during the nearly ten years.

104. **Operative Treatment of Double Uterus and Vagina.**—Strassmann succeeded in restoring approximately normal conditions in the genital apparatus, and normal pregnancy and delivery followed in most of the seven cases reported. Instead of cauterizing or mutilating the genital apparatus, he merely cut away the obstructing wall or septum separating the uterus or vagina or both into two parts; this left a practically normal single organ. He discusses the preferable technic with uterus septus, bicornis, didelphys, etc., and says that he would not hesitate to correct conditions in this way even with an existing pregnancy in one half.

105. **Vaginal Hysterectomy.**—Nagel has performed this operation in 114 cases in the last six years without a death. The series includes thirty-one cervix and three corpus cancer cases.

109. **Pregnancy Toxicoses.**—Freund reiterates that the only rational way to treat pregnancy disturbances indicating serious injury from toxins is by putting an end to the pregnancy, thus removing at one stroke the cause of the intoxication. This should be supplemented by venesection to remove large amounts of blood saturated with the toxins. Last but not least in importance is the isolation of the patient to remove all source of irritation. He declares that the idea of treating pregnancy intoxication by keeping the woman under the influence of sedatives (Stroganoff's prophylactic method) may keep down the number of convulsions but it fails to remove the cause, and it adds another poison to the poisons with which the organism is already contending.

112. **Puerperal Eclampsia Without Convulsions.**—At necropsy in the case reported the placenta showed necrosis of numbers of villi. The woman was 39, at the seventh month of her fifth pregnancy, apparently healthy at 9 p. m. and dying at 8 a. m. the next morning in profound coma.

Deutsche medizinische Wochenschrift, Berlin

September 19, XXXVIII, No. 38, pp. 1769-1816

116 Pathology of the Pupil. A. Westphal.
117 Action of Caffein on Bronchi and Respiration. (Zur Kenntnis des experimentellen Bronchospasmus.) J. Pal.
118 Diathermy. (Das Verhalten der Körper- und Gewebetemperatur des Menschen bei der Thermopenetration.) A. Fürstenberg and K. Schemel.
119 Artificial Pneumothorax. M. Ascoli.
120 Transmission of Leprosy to Monkeys. (Kultivierbarkeit des Lepraerregers und die Uebertragung der Lepra auf Affen.) J. Rennstjerna.
121 Myoma of Gastro-Intestinal Canal. (Zur Kasuistik der Myome des Darmkanals; zugleich ein Beitrag zur Differentialdiagnose des Ulcus duodeni.) G. Rosenow.
122 Acute Ulcerative Colitis. A. Albu.

Deutsche Zeitschrift für Chirurgie, Leipsic

September, CXVIII, Nos. 5-6, pp. 403-593

123 *Operative Treatment of Traumatic Brachial Plexus Paralysis. P. J. Winnen.
124 Periosteum Emulsion as Aid in Production of Bone. (Exp. Beitrag zur Knochenneubildung durch Injektion bzw. Implantation von Periostemulsion.) T. Jokoi.
125 Treatment of Oblique Inguinal Hernia. (Zur Behandlung des schrägen Leistenbruchs.) F. Torek (New York).
126 Neurofibromatous Enlargement of the Tongue. (Makroglossia congenita neurofibromatosa.) A. Hayashi.
127 Case of Adenomatous Polyposis of the Intestines with Carcinoma of the Rectum. S. Oseki.
128 *Advantages of Local Treatment of Gonorrhea from Above, Introducing Cannula Through Bladder Wall. A. Müller.
129 Minor Plastic Operations on Fingers and Hands. R. Klapp.
130 Care of Stump in Resection of Stomach. (Statistische Mitteilung über die Resultate des Wilmsschen Verfahrens zur Stumpfversorgung bei Magenresektion.) S. Kunika.
131 Two Cases of Extensive Syphilitic Necrosis of Skull. (Syphilis der platten Schädelknochen.) A. Wertheim.
132 Development of the Tubercle of the Metatarsal Bone of the Little Toe. (Entwicklung der Tuberositas metatarsi V.) J. Schouwey.
133 *Calculi in the Urethra. (Harnröhrensteine.) A. Britnew.
134 Clinical Importance of Coagulating Properties of Blood with Jaundice. (Koagulationsbestimmung des Blutes bei Ikterus.) S. Kunika.
135 Intra-Abdominal Myorraphy of Levator Anus for Prolapse of Rectum. (Intraabdominelle Myorrhaphie der Heber des Afters beim Vorfall des Mastdarms.) A. Jianu.

123. **Brachial Plexus Paralysis.**—Winnen has operated in three cases of this kind and has collected forty-three from the literature; 70 per cent. of the patients were improved or entirely cured by operative treatment. The proportion would probably be still larger now with the improved technic. His three patients were entirely unable to use the arm, but now have full functional use of it. The operation was done twelve years ago in one case. The results attained justify wide application of operative measures, especially when cicatricial changes or other conditions indicate that conservative treatment is scarcely likely to be effectual. His patients were 7, 17 and 50 years old. In two the plexus had been injured by a fall on glass or a stab wound, cutting the fifth and sixth roots, with Erb's paralysis of the shoulder in one case; in the other only the deltoid muscle was paralyzed. No benefit could have been obtained from conservative measures alone, as the roots had been severed and the nerve stumps embedded in thick scars. One of the patients was accepted for military service as sound.

128. **Descending Treatment of Gonorrhea.**—Müller comments on the folly of injecting the disinfecting solution from below in treatment of gonorrhea in the male as this is liable to sweep germs into still intact regions. Far better is it to wash them down by flushing the urethra from above, and he says that as no one can tell which case of gonorrhea is going to run a mild and which a severe and chronic course, it is much better to treat them all in the most thorough, radical manner. The minute incision to introduce the cannula into the bladder is counterbalanced by the certainty of cure when the injection is attacked from above, thus preventing its upward spread, killing the gonococci and washing them out at one stroke.

133. **Urethra Calculi.**—Britnew has encountered twenty-four cases of concrements in the urethra in the last ten years at Smolensk. In only two of the cases was the stone formation primary at this point. Phosphate stones were the most frequent, and in one case the urethra stone was responsible for the death of the patient. He has never met with a case in a female.

Jahrbuch für Kinderheilkunde, Berlin

September, LXXVI, No. 3, pp. 247-368

136 *Non-Pathologic Cardiac Murmurs in Children. (Ueber pseudokardiale und kardiale Geräusche im Kindesalter ohne pathologische Bedeutung.) W. Schlieps.
137 Institutional Treatment of Hysteria in Children. (Anstaltsbehandlung der Hysterie im Kindesalter.) F. v. Reusz.
138 Congenital Myatonia. O. Thorspecken.
139 Mongolian Idiocy. (Ueber Mongolismus bei Kindern.) W. Shukowsky and R. Aisenberg.

136. **Cardiac Murmurs in Childhood of No Clinical Significance.**—Schlieps states that a large percentage of children under 14 years of age have a functional heart murmur. They should not be called anemic murmurs because they have no relation to anemia. About two-thirds of them originate in the lung as it accommodates itself to the changing size of the heart in systole. The other third arise from the lowered tone in the heart muscle, and are to be cured by improvement in the general health. Rest in bed, which is indicated in organic murmurs, is the very worst treatment in these cases.

Medizinische Klinik, Berlin

September 15, VIII, No. 37, pp. 1485-1530 and Supplement

140 *Joint Disease. (Zur Klinik der Gelenkerkrankungen.) R. Schmidt.
141 Unusual Causes for Hemorrhage During Pregnancy. (Schwangerschaftsblutungen.) O. v. Franqué. Commenced in No. 36.
142 Immunization and Chemotherapy with Experimental Cancers. P. Uhlenhuth.
143 Symposium on Early Rising After Operations and Childbirth. (Umfrage über das Frühaufstehen nach Operationen und Geburten.) H. Kümmell and others. To be continued.
144 Syringomyelic Shoulder Disease. (Arthropathie des Schultergelenks durch Syringomyelie bei einem Arzte, durch 22 Jahre für Folge traum. Fraktur gehalten.) R. Klenböck.
145 *Gastro-Intestinal Hemorrhage as Unusual Symptom of Internal Disease. J. Meinertz.
146 *Nephritis. (Neuere klinische Anschauungen über Nephritis.) K. Schlayer.

140. **Joint Disease.**—Schmidt holds up in review a number of puzzling cases of joint affections to show the necessity for being on the alert to suspect syringomyelia, tabes, gonorrhea or syphilis in apparently simple joint troubles. In one case a man of 36 had seven years of what was supposed to be gout until other signs of tabes developed. Another patient had three recurrences of apparently typical acute articular rheumatism in eight years. Schmidt noticed, however, that the polyarthritis was never ushered in by a febrile sore-throat and that there was no tendency to acid-smelling sweats. Another feature of the case was a sudden painful eye affection which had come on six days before the last recurrence of the polyarthritis. Up to two liters of urine were voided, notwithstanding the high temperature, and gonococci were found in it. It was then learned that gonorrhea had been contracted three weeks before the first attack of polyarthritis eight years before. The young man had become a coccus carrier, and the germs lurking possibly in the prostate had sallied forth at intervals and caused a specific polyarthritis and finally the iridocyclitis. In another case ordinary acute articular rheumatism was associated with recent gonorrhea; this possibility should always be borne in mind as the prognosis is unfavorably influenced thereby. He suggests that the reason why joint affections are not more common in gonorrhea is because the pus gets drained away; when it is dammed up, as when the process is in the prostate, the tendency to joint complications is more imminent. In one of the most instructive cases cited, a patient with a tuberculous affection of the lymph-nodes around the stomach developed immediately after a gastro-enterostomy an extra-articular polysynovitis, all the tendon sheaths and bursæ becoming fluctuating tumors. Schmidt further presents evidence to prove that acute articular rheumatism is one of the branches on the trunk of congenital asthenia; the importance of the constitutional soil is shown especially, he says, in the fact that acute articular rheumatism is not contagious. The joint affections in inherited or acquired syphilis are liable to yield to specific treatment. Schmidt reports further a case in which an appendicitic abscess was followed by a chronically recurring febrile polyarthritis with contracture in time. Arthritic symptoms after delivery, if accompanied by the diazo reaction, should suggest sepsis; the lymph-nodes and spleen should be examined—the spleen is rarely enlarged with acute polyarthritis. After the age of 40, pure acute polyarthritis becomes less and less frequent. Occasionally remarkable benefit is derived from thyroid treatment of chronic joint disease. Schmidt has been much impressed with the benefit from epinephrin; the patients feel immensely relieved and large effusions in the joints have retrogressed under daily subcutaneous injections of 0.5 or 1 c.c. of a 1 per 1,000 solution. He found this treatment peculiarly effectual in a case of osteomalacia. After ten injections the woman was freed from all pain. He explains its remarkable action in these cases as breaking up a vicious circle. The partially active and partially passive congestion in the bone marrow sets up the pain and the pain in turn induces hyperemia in the bone marrow. The epinephrin reduces the congestion and the vicious circle is broken up and the osteomalacia, asthma or arthritic process benefits at once. The assumption of some analogy of this kind between osteomalacia and arthritic processes is sustained by their both being favorably influenced by similar measures, by heat, etc., and by their having certain predisposing factors in common (damp houses, etc.). As the epinephrin seems to benefit indiscriminately joint affections of various origins, ordinary acute polyarthritis, the gonorrheal and syphilitic, it must act in a general way and probably on the vessels in the joints. Arthritic processes, asthma and osteomalacia seem to have thus a common factor which can be controlled by epinephrin.

145. **Gastro-Intestinal Hemorrhage as Symptom of Internal Disease.**—In the first of the three cases related a woman five months pregnant had repeated gastric hemorrhage for ten days; necropsy revealed an unsuspected sepsis. In the second case an elderly man had sudden threatening hematemesis in the midst of apparent health. It proved to be the earliest manifestation of incipient cirrhosis of the liver. There was no ascites and the spleen was not enlarged. The liver was rather large and hard and there was some tendency to tympanites, but the levulose and galactose tests of liver functioning were negative.

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146. **Progress in Our Knowledge of Nephritis.**—Schlayer writes from the medical clinic at Tübingen in charge of Romberg to call attention to the results of recent extensive research which have thrown new light on kidney disease. It has shown that the kidney output is determined by the biological functional condition of the organ, regardless of the histologic or etiologic character of the injury, if the organ is not entirely normal. The first effect of the injury is an abnormal irritability and in this stage the kidney does extra work, the output of urine increasing. Then follows a stage of exhaustion during which the kidney functionates sluggishly, and oliguria or anuria is the result. Between these two extremes, during the transition from the excessive to the subnormal functioning, the kidney passes through a stage in which the output of urine is apparently normal. This fluctuating between extreme irritability and deadening from exhaustion, with the deceptive midway stage of pseudonormal output, explains many puzzling conditions in kidney pathology. The deceptive character of the pseudonormal stage is unmasked by the curve of salt in the urine and the specific gravity and by test elimination of milk sugar and potassium iodid. These tests and the curve of the urine output during the day, especially after meals, allow complete oversight of the activity of a diseased kidney and a clear understanding of the morbid condition. They show that with ordinary contracted kidney the kidney vessels are predominantly affected and they are hyperirritable. On the other hand, with chronic parenchymatous nephritis the kidney vessels are predominantly involved likewise, but they are in a torpid state, incapable of functioning. During the stage of hyperirritability the kidney reacts to a small dose of a mild diuretic with intense diuresis—this is one of the best tests for revealing the excessive irritability. During the midway pseudonormal stage the response is apparently normal. In the hyperirritable phase not only the output of water but also of salt is very much increased, so that the discovery of albuminuria accompanying polyuria and normal or above normal salt content of the urine suggests serious injury of the kidneys, even if the albumin disappears from the urine. Complete recovery should not be assumed until the output of both water and salt is normal and the test milk sugar is eliminated in the normal period. Schlayer regards the polyuria as of equal diagnostic import to albuminuria, both in acute or chronic nephritis. The milk-sugar test reveals contracted kidney with polyuria in an earlier phase than we have hitherto been able to detect it. On the other hand, contracted kidney with the pseudonormal urine or oliguria, is revealed by the response to intake of more salt and more water, by the abnormal response to diuretics, and by the delay in elimination of milk sugar. The views here presented explain the danger of whipping up the exhausted kidney with diuretics; after a brief spurt, conditions are worse than before, while measures to spare or gently stimulate the kidneys materially improve conditions.

Mitteilungen aus den Grenzgebieten der Med. und Chir., Jena

XXV, No. 2, pp. 211-402. Last indexed October 12, p. 1414

147 *Sterile Purulent Meningitis. (Meningitis purulenta aseptica.) B. Zabel.
148 *Leukocytosis and Rivalta's Reaction in Blood-Serum. U. Gironi.
149 Epigastric Pain with Appendicitis. S. Solleri.
150 *Parenchymatous Inflammation of the Liver with Erysipelas. W. Hildebrandt.
151 Pericardiotomy. P. R. v. Walzel.
152 *Immunization Against Cancer. (Zur Frage der Immunisierung gegen maligne Tumoren.) E. v. Graff and E. Ranzi.
153 *Invagination of the Intestine in Children. (Die Darminvagination im Kindesalter, durch ca. 400 dänische Fälle beleuchtet.) A. Kock and H. P. T. Oerum.
154 *Calcium Lactate in Fibrous Ostitis. (Einwirkung von Calcium lacticum auf einen Fall von Ostitis fibrosa mit experimentell-therapeutischen Stoffwechseluntersuchungen.) M. Jacoby and Schroth.
155 Antipepsin Content of Blood with Gastric Cancer. (Antipepsingehalt des Blutes in Fällen von Ulcus ventriculi.) V. Lieblein.

147. **Sterile Purulent Meningitis.**—Zabel's patient was a boy of 12, previously healthy, who suddenly developed an acute syndrome with all the signs and symptoms of meningitis, the cerebrospinal fluid containing blood and numerous leukocytes but no microbes. The conditions seemed to indicate that the admixture of blood was due to diapedesis secondary to the inflammation. The lad's brother was having mumps at the time, and some writers assert that fully 10 per cent. of all cases of mumps are accompanied by signs of meningitis. In this case the boy had no symptoms of mumps at any time nor of any general bacterial infection, and he had soon completely recovered, confirming the generally favorable prognosis of aseptic meningitis. No cause for the cryptogenic aseptic meningitis could be discovered.

148. **The Rivalta Reaction as Sign of Leukocytosis.**—Gironi says that Rivalta's acetic-acid test is proving an instructive index of the numbers of leukocytes and of the proportions between the red and white corpuscles. (The technic was described recently on page 978, Sept. 21, 1912.) He tabulates the findings in twenty-one patients with various affections—all showing that the reaction is most pronounced in organic fluids containing the largest numbers of leukocytes, and is thus directly proportional to the leukocytosis and inversely proportional to the ratio between the whites and reds.

150. **The Liver with Erysipelas.**—Hildebrandt reports nine cases in which erysipelas was accompanied by urobilinuria. The latter may be the expression of an acute parenchymatous hepatitis. The liver affection may survive the erysipelas, and the suspicion of the liver involvement should contra-indicate the use of chloroform.

152. **Immunization Against Cancer.**—Graff and Ranzi make a subcutaneous injection of an emulsion of the patient's own tumor after removal of a cancer, and report nine cases in which this method was applied, after extensive experimental research. In the cases reported a recurring tumor was excised and the patient injected with the extract. On account of the rapid recurrence, the prognosis had been regarded as unusually bad, but three or four years have now passed without a sign of recurrence in three cases. One patient had returned every second year since 1901 for removal of a fascia sarcoma. Since the tumor extract was injected in 1907 there has been no further signs of renewed growth. The technic is approximately the same as for Coca's vaccine therapy (described in THE JOURNAL, 1910, liv, 1904. See also 1911, lvii, 1947).

153. **Intussusception in Children.**—Of the 397 cases reported by Kock and Oerum, 288 were in infants less than a year old. The results of a primary operation are just as good as those of bloodless methods, and it protects against "sham reduction." After the second day, one might flush the intestines and try taxis, resorting to a secondary laparotomy at need. The results of this were excellent for more than half of the children on whom the bloodless method had been tried and failed. A full bibliography is appended.

154. **Calcium Lactate in Fibrous Ostitis.**—Under the influence of calcium lactate, callus began to form at the points of the fractures and the long bed-ridden patient was soon able to be up and about. She was a woman of 49, in good health until four years before when she grew weak and helpless, with wandering pains in the bones of the entire skeleton. The calcium lactate was given in the dose of 2 gm. twice a day at first and then three or five times a day. Improvement was rapid and in less than a month consolidation had occurred. On suspension of the lactate the condition became stationary, but on its resumption with exposures of the ovaries to the Roentgen rays, improvement continued.

Monatsschrift für Geburtshilfe und Gynäkologie, Berlin

XXXVI, Internat. Congress Festschrift, pp. 1-336

156 *Tuberculin Reaction in Pregnant Tuberculous Women. (De l'intra-dermo-réaction à la tuberculine chez les femmes enceintes tuberculeuses. Son utilité au point de vue du pronostic.) P. Bar.
157 *Tuberculous Peritonitis with Effusion in Pregnant Women. L. Manglagalli.
158 Twisting of Pregnant Uterus. (Lateralflexion, Torsion und Achsendrehung des graviden Uterus.) O. Küstner.
159 *Hematuria in Pregnant Women. (Zur Frage der Schwangerschaftshämaturie.) H. Treub.
160 Uterine Cancer and Pregnancy. C. Jacobs.
161 *Child-Bearing After Myoma Operations. (Eigene Erfahrungen in bezug auf Schwangerschaft und Geburt nach ventraler Enukleation Intramuraler Uterusmyome.) O. Engström.
162 *Artificial Premature Delivery in Treatment of Contracted Pelvis. (Stellung der künstlichen Frühgeburt in der Therapie des engen Beckens.) M. Hofmeier.
163 Premature Separation of Normally Located Placenta. (Solutio praecmatura placentae normaliter insertae.) P. Zweifel.
164 Cavities in Placenta. (Einige bisher nicht beschriebene Hohlräume in der Placenta.) L. Meyer and J. E. Löhse.

165 Operative Treatment of Septic and Gonorrheal Peritonitis. J. Veit.
166 Hypophysis Extract in Treatment of Peritonitis. R. Klotz.
167 Prophylaxis of Operation Peritonitis. (Ueber Vermeidung der Operations-Peritonitis.) E. Bumm.
168 *The Internal Secretion of the Mamma. (Ueber die innere Sekretion der Brustdrüse.) L. Adler.
169 *Cystoscopy, etc., Through a Condom. (Transkondomoskopie.) O. Mansfeld.
170 New Vagina Made from Rectum. (Scheidenbildung aus dem Rektum nach Schubert bei angeborenem Scheidenmangel.) O. v. Franqué.
171 "Verify, Verify, and Again I Say Verify." (A Retrospect.) H. Macnaughton-Jones.
172 Operative Treatment of Genital Prolapse. E. Pestalozza and K. Franz.
173 Vaginal Operations for Cancer. (Bericht über das 11te Beobachtungsjahr der erweiterten vaginalen Krebsoperation.) F. Schauta.
174 Radiotherapy of Uterine Myomas and Hemorrhagic Uterine Disease. P. Jung, E. Essen-Möller and E. Runge.
175 Psychoneuroses and Gynecology. M. Walthard.
176 Mixed Anesthesia. (Ueber den Dämmerschlaf in der Geburtshülfe durch Scopolamin in Verbindung mit Morphium, Pantopon und Narkophin.) E. Zweifel.

156. **Tuberculin Reaction in Pregnant Women.**—Bar has applied the intradermal test to sixty-three pregnant tuberculous women. The response and the course of the cases showed that a negative or nearly negative reaction with certain tuberculosis is a bad sign, even if the local lesions are not very pronounced. On the other hand, a lively reaction should turn the scale against the necessity for interrupting the pregnancy, other things being equal. If a lively reaction is followed by a negative response on repeating the test, this is a bad sign. A negative reaction persisting after delivery suggests a speedy fatal outcome in advanced tuberculosis.

157. **Tuberculous Peritonitis Complicating Pregnancy.**—Mangiagalli's case demonstrates the wisdom of conservative expectant measures when a woman with tuberculous peritonitis becomes pregnant. His patient bore a viable child at term, and both are now in the best of health, six years after the birth of the child, three years after the woman had had a posterior colpoceliotomy to remedy conditions and two years after a final operation, in which a cystic papilloma had been removed. The first signs of the peritonitis had been first observed at the third month of pregnancy and the ascites soon required tapping. The abdomen was opened and six liters of fluid were evacuated but the adhesions contraindicated any further operation and the gravid uterus was left undisturbed. Delivery was practically normal and there was no exacerbation for two or three years, when the tuberculous peritonitis flared up again. This time a permanent cure was realized by removal of cystic ovaries.

158. **Pregnancy Hematuria.**—Treub has encountered a case of this kind, blood being found in the urine for a few weeks during the third month of the woman's second pregnancy. Bed rest, restriction to milk and injection of 10 c.c. of inactivated rabbit-serum had no effect on the hematuria. The blood came exclusively from the left kidney and amounted to an average of 20 gm. a day. The patient had a valvular affection which forbade general anesthesia for decapsulation or nephrotomy, and there seemed no resource except to interrupt the pregnancy. As soon as the uterus was emptied the hematuria began to subside gradually. Treub has found eighteen other cases of pregnancy hematuria on the records of his hospital. Analysis of this material confirms the view that the pregnancy is liable to induce hematuria by the active and passive hyperemia or the autointoxication, but that this does not occur unless the kidney is inferior to begin with.

161. **Pregnancy After Myomectomy.**—Engström states that twenty of twenty-seven women conceived and bore a healthy child or children after abdominal enucleation of myomas in the wall of the body of the uterus.

162. **Induced Premature Delivery with Contracted Pelvis.**—Hofmeier states that induced delivery at the very beginning of labor offers many advantages with contracted pelvis. His rule hitherto has been to induce delivery early by mechanical means; none of the seventy-one women thus treated succumbed but ten of the children died.

168. **Internal Secretion of the Mamma.**—Adler devotes forty pages to his report of experimental research with mamma extract, epinephrin and normal serum on the guinea-pig uterus, etc., on prevention of conception and checking the development of the embryo. Epinephrin seems to inhibit and normal serum to stimulate the tonicity of the guinea-pig uterus.

169. **Transcondomoscopy.**—Mansfeld has coined this term to express endoscopy through a condom, the condom pushed partly into the bladder and then filled with salt solution and the cystoscope introduced directly into the middle of the distended condom. It lies against the wall of the bladder and is as transparent as glass, showing up the conditions better than with any other technic; the walls are seen as they are, not modified by a preceding rinsing with fluid; clots, ulcers, fistulas, deposits of any kind are shown up undisturbed and to perfection. Any blood that oozes does not get into the fluid and render it turbid, while it can be seen oozing. The ureter catheter can be introduced in a condom piercing the latter at the last minute as it enters the ureter, thus avoiding carrying infection from the bladder into the ureter. Another advantage of the condom is that in case of rupture of the bladder there is no danger of fluid leaking through the tear. The condom is also useful in case of a fistula to repair the wall enough to permit rinsing out the pelvis above. This technic may be found an improvement also, he suggests, for endoscopy of the rectum and abdominal cavity.

Monatsschrift für Kinderheilkunde, Leipsic

XI, No. 4, pp. 141-174

177 *Artificial Pneumothorax for Children; Ten Cases. (Ueber künstlichen Pneumothorax bei Kindern.) F. Pleisticker and H. Vogt.
178 Treatment of Infants with Serious Losses of Weight. (Behandlung von Säuglingen bei schweren Gewichtsverlusten.) K. Stolte.
179 Buttermilk in Infants' Diarrhea. L. Schaps.

177. **Artificial Pneumothorax in Children.**—The ages of the children in the ten cases reported ranged from 10 months to 14 years. In eight of the cases the conditions favored the successful compression of the lung by this means and confirmed anew the wonderful tolerance for the shutting off of an entire lung, even in the youngest children. The great difficulty in applying the procedure to children is that it is hard to tell when the needle is in the open pleural cavity. We cannot get the child to hold its breath which in adults readily shows on the manometer whether we are in the pleural space or not. By-effects were observed in only one case and they were explained in this by the discovery next day that the child was coming down with scarlet fever. The results were disappointing in the cases of chronic bronchiectasia; radioscopy showed that adhesions prevented the collapse of the lung at certain points. In the cases of tuberculosis the outcome has been excellent, the disease taking an unhoped-for turn for the better; in two such cases the condition had been regarded as absolutely hopeless before. One was in the youngest child treated and in this case there was a slight effusion into the gas-filled cavity. The first incision is made under general anesthesia. The lung must be immobilized as completely as possible, and roentgenoscopy is a great help for determining when this is realized.

Münchener medizinische Wochenschrift

September 17, LIX, No. 38, pp. 2033-2088

180 Moving Roentgenography of the Heart. (Verfahren zur Darstellung der Herzbewegung mittels Röntgenstrahlen—Röntgenkymographie.) T. Gött and J. Rosenthal.
181 *Improved Technic for Epiphanin Reaction. (Ueber Versuche Antigen-Antikörperwirkungen sichtbar zu machen.) K. v. Angerer and H. Stötter.
182 *Beneficial Influence of Febrile Processes on Parasyphilitic Nervous Disease. (Einwirkung fieberhafter Prozesse auf metaluetische Erkrankungen des Zentralnervensystems.) Friedländer.
183 One Hundred Laparotomies in the Home. (100 Operationen mit Eröffnung des Bauchfells im Privathause.) W. Konopka.
184 Circumcision in Treatment of Large Carbuncles. Heddaeus.
185 The Campaign Against Malaria in Italy. (8 Jahre staatlicher Chininbetrieb in Italien und der Kampf gegen die Malaria.) A. Lustig.

181. **Simplified Technic for the Epiphanin Reaction.**—This test is based on specific changes in the drop-forming properties of the serum. (It was described in THE JOURNAL, 1911, lvi, 228). Further applications of the test are recorded here with a simplified technic. The literature on the subject to date is reviewed, and the diagnostic value of the simple visible reaction is extolled.

182. **Influence of Febrile Processes on Parasyphilitic Nervous Disease.**—Friedländer says that even Hippocrates had noticed that a mental affection was liable to be cured by an intercurrent typhoid fever, and this influence from a febrile process has been recorded in a number of affections involving the nervous system. He experimented with a typhoid bacillus extract, like a tuberculin, in treatment of tabes and paralysis but obtained no appreciable results as he was unable to obtain an extract that induced a febrile reaction. His study of the literature disclosed a surprising number of cases on record between 1813 and 1900 in which an intercurrent typhoid cured a severe psychosis. Wagner von Jauregg tried extracts of the germs of recurring fever, intermittent fever and erysipelas, in treatment of progressive paralysis, but he finally settled on tuberculin in 1895 and has published a number of reports of his success in this line since then. Friedländer has been using this method of treatment for parasyphilitic nervous disease for some years, commencing in 1897, and here relates two especially instructive cases. The first patient had severe taboparalysis which was making rapid progress, the pupil reaction and tendon reflexes being abolished. After the first febrile reaction to tuberculin, the reflexes were found normal, and the man of 37 was soon able to practically resume his life as an artist. The remissions in Friedländer's clinical experience followed so systematically on the tuberculin injections that, he thinks, the number excludes the possibility of chance. In the second case the reflexes returned to normal and the Wassermann reaction became negative. He knows of no cases on record in which in such severe forms of parasyphilitic nervous disease the reflexes became normal again as in these here reported. His aim is to induce a febrile reaction, and after a test injection to exclude tuberculosis, he pushes the tuberculin from 0.005, 0.01, 0.06 to 0.1 or 0.3 gm. Wagner makes about nine injections, beginning with 0.1 and increasing to 0.6 gm., but Friedländer proceeds more cautiously and does not care to induce a fever over 38.5 or 39 C. On the days between the injections—which are given at evening—warm packs and carbonated and other baths are given. Chronic heart or kidney disease and much debility contra-indicate the treatment, but not gastric crises or paralysis. He never applied the tuberculin and mercury together, as this would make too great demands on the patient, and the mercury might interfere with the therapeutic action of the fever.

St. Petersburger medizinische Zeitschrift

September 14, XXXVII, No. 17, pp. 249-262

186 •Tardy Chloroform Fatality. (Zur klinischen Symptomatologie des protrahierten Chloroformtodes.) B. Ottow.

186. **Tardy Fatal Chloroform Accident.**—Ottow reports one of the rare cases—only fifteen are on record to date, he says—in which death followed a few days after general chloroform anesthesia with no cause to be found for it except the toxic action of the anesthetic. The patient was a previously healthy young woman with uncontrollable vomiting at the third month of pregnancy; at the fourth month the fetus was extracted by vaginal cesarean section under chloroform. Twenty-four hours later the heart action grew weak, the pulse 140 to 160, and jaundice, apathy alternating with agitation, led into coma, with death the third day after the operation. The wound was healing and there were no signs of sepsis. The debility and dehydratation of the tissues in consequence of the uncontrollable vomiting, and the considerable loss of blood during the operation may have contributed to enhance the toxic action of the anesthetic. Necropsy in these tardy chloroform fatalities shows degeneration in the heart, liver and kidneys.

Virchows Archiv, Berlin

August, CCIX, No. 2, pp. 161-329

187 Toxicology of Thorium X. H. Löhe. Commenced in No. 1.
188 Functional Adaptation. (Anpassungslehre, Histomechanik und Histochemie.) W. Roux.
189 Allen Bacteria in Stools. (Zur Frage der fäkalen Ausscheidung darmfremder Bakterien.) H. Raubitschek.
190 Intestine Defect. (Zur Pathologie des kongenitalen partiellen Darmdefektes.) Y. Noguchi.
191 Invagination of Pylorus Induced by Polypous Myoma. F. Lotsch.
192 Pancreas Tumors. B. Roman.
193 Primary Carcinoma of the Liver. M. C. Winternitz and C. Davidsohn.
194 Tumors of Vagina in Children. (Zur Lehre von den Mischgeschwülsten der kindlichen Scheide.) M. Westenberger.

Wiener klinische Wochenschrift, Vienna

September 19, XXV, No. 38, pp. 1405-1436

195 •Tabes and Gastric Ulcer. (Tabische Krisen, Ulcus ventriculi and Vagus.) A. Exner and E. Schwarzmann.
196 •Spasm of the Cardia and Gastric Ulcer. H. Heyrovsky.
197 Toxins Generated by Action of Organ Emulsions on Atoxyl. (Beeinflussung der Atoxylwirkung durch Organbrei.) L. Arzt and W. Kerl.
198 Primary Carcinoma of the Trachea. P. Kaunitz.
199 Paroxysmal Hemoglobinuria from Primary Injury of the Kidney. (Eigenartige Kombination von paroxysmaler Hämoglobinurie mit Nierenschädigung.) F. Tedesko.
200 Pupil Phenomena. (Nachtrag zur "Klinik der Pupillenphänomene.") S. Goldflam.

195. **Tabes and Gastric Ulcer.**—Exner's method of treating the gastric crises of tabes by severing the vagus nerve on both sides has led to the discovery that gastric ulcers are surprisingly frequent in tabetics and that the vagus is certainly pathologic in many such cases. In the necropsy records of seventy-five tabetic cases, gastric ulcer is mentioned in five and gastric cancer in three. Eight of the group had had gastric crises during life. In his own experience with a laparotomy in tabes, he has encountered six cases of gastric ulcer but in four others the stomach seemed to be free from organic changes. The above findings and especially the pathologic changes in the vagus found in five cases, suggest that gastric ulcer in tabes is a trophic affection, analogous to perforating ulcer of the foot. He now makes a point of doing gastroenterostomy after the vagotomy to ward off possible trouble from this source. In one case of vagotomy and simple gastroenterostomy, roentgenoscopy several months later showed slight stenosis of the pylorus.

196. **Cardiospasm and Gastric Ulcer.**—Heyrovsky reports from the same clinic six cases of cardiospasm and comments on the frequent coincidence of gastric ulcer. A vagus neuritis was evident in another case of chronic cardiospasm, as in Kraus' case, and Heyrovsky is inclined to refer both the ulcer and the spasm to a common cause, disease of the vagus. He gives radiograms of his cases and adds that repeated radioscopy may be necessary to detect intermittent cardiospasm.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXI, No. 3, pp. 449-693. Last indexed October 12, p. 1417

201 Auto-Infection in Parturients. (Die endogene Infektion in der Geburtshilfe.) O. Pankow.
202 Virulence of Non-Hemolytic Streptococci. (Nichthämolytische Streptokokken und ihre Bedeutung für die puerperalen Wunderkrankungen.) M. Traugott.
203 Silver Atoxylate in Streptococcus Infection. W. Kirchhoff.
204 •Repeated Dual Pregnancy in Double Uterus. (Wiederholte Doppelschwangerschaft bei Uterus bicornis bicollis.) R. Köhler.
205 Physical Development of Fetus at Different Stages of Gestation. (Die körperliche Entwicklung der Frucht in ihrer Beziehung zur berechneten Schwangerschaftsdauer.) W. Hannes.
206 Sugar Content of Blood with Genital Hemorrhage, Mental Disease, Eclampsia and in Normal Pregnancy. (Der Blutzuckergehalt bei genital bedingten Blutungen und bei Psychoneurosen, etc.) W. Benthin.
207 •Prophylaxis and Treatment of Septic Infection. F. Heimann.
208 Adenomyoma of Fallopian Tube. E. Santi.

204. **Dual Pregnancy with Double Uterus.**—In the case reported by Köhler the uterus was double, with a single vagina, and in the course of fourteen years the woman had fifteen apparently normal pregnancies and seven abortions. At one time she had four fetuses in the uterus at once, as one was expelled in February; in March she aborted with twins, and in November was delivered of a child at term. He discusses the cause of the deformity and similar cases on record.

207. **Prophylaxis of Septic Infection.**—Heimann has been experimenting with mice to determine the protecting power of intraperitoneal injection of camphorated oil, oil alone, silver salts or antistreptococcus serum. In his experiments on 300 mice quite favorable results were obtained with an antiserum derived from the same strain of streptococci as had been used for immunizing the serum-yielding animals. On the other hand, serum made from streptococci pathogenic for human beings never displayed the slightest efficiency on the mice, unless it had been passed through an animal. Each strain of streptococci seems to have a special and specific action and the various strains cannot be used indiscriminately. The results of the prophylactic use of oil and chemicals were

entirely negative while camphorated oil in a 10 per cent. concentration killed the animals and a 2.5 per cent. caused severe symptoms.

Zeitschrift für Urologie, Berlin

September, VI, No. 9, pp. 727-806

209 Treatment of Undescended Testicle. (Behandlung der Hodenretention.) O. Uffreduzzi.
210 Reflex Disturbances from Hypertrophy of the Verumontanum. (Reflektorische Folgezustände der Colliculus-Hypertrophie.) Orlowski.

Zentralblatt für Chirurgie, Leipsic

September 21, XXXIX, No. 38, pp. 1289-1320

211 Partial Laceration of Tendon Cause of Snapping Finger. (Zur Frage der Entstehung des schnellenden Fingers—partieller Sehnenriss.) F. Franke.

Zentralblatt für Gynäkologie, Leipsic

September 21, XXXVI, No. 38, pp. 1241-1264

212 Obstetric Laceration of Tentorium. (Tentoriumriss bei noch nicht eingetretenem Kopfe.) O. v. Herff.
213 Hematomyelia as Complication of Eclampsia. E. Liebich.
214 "The Fetus is Part of the Mother's Viscera." (Verbrechen und Gesetz.) J. Kocks.

Zentralblatt für innere Medizin, Leipsic

September 21, XXXIII, No. 38, pp. 941-964

215 Disturbance in Circulation of Lymph Responsible for Rheumatism. (Das Wesen und die Behandlung rheumatischer Erkrankungen. Betrachtung über Lymphzirkulationsstörung.) H. Röder.

Revista de Medicina y Cirugia, Havana

September 25, XVII, No. 18, pp. 505-530

216 Technic for Diathermy. E. Fortun.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 12, XXXIII, No. 110, pp. 1145-1152

217 *Differential Diagnosis of Sciatica and Tuberculosis of Sacro-Iliac Region. F. Ubertis.

September 15, No. 111, pp. 1153-1168

218 Technic for Serotherapy. N. Federici.

September 17, No. 112, pp. 1169-1176

219 Pneumonia in Course of Typhoid; Two Cases. (Febbre tifoide e polmonite cruposa.) M. Giosefi.

217. **Differential Diagnosis of Sciatica and Tuberculosis in Sciatic Region.**—Ubertis was able to diagnose the tuberculous nature of the supposed tuberculosis in the two cases illustrated by a preceding pleurisy, tuberculosis in the family, the tendency to epistaxis during childhood, the slow development of the affection, the rheumatoid disturbances rebellious to all the ordinary measures and the persisting pain in the sacro-iliac region. One patient died later of Addison's disease but the second made a clinical recovery under general and local iodin treatment.

Policlinico, Rome

September 15, XIX, No. 38, pp. 1369-1408

220 Differential Diagnosis of Cerebellum Tumor and Hydrocephalus. (Il tumore del cervelletto e l'idrocefalo interno cronico nella sintomatologia.) A. Ceconi.
221 Recurring Spontaneous Dislocation of the Patella. (Lussazione spontanea e completa della rotula all'interno recidivante.) E. Borelli.

Riforma Medica, Naples

September 14, XXVIII, No. 37, pp. 1009-1036

222 *Autoserotherapy of Hydrocele. L. Caforio.
223 Roentgen-Ray Cancers. (Cancroidi da raggi Röntgen.) C. Piazza.

222. **Autoserotherapy of Hydrocele.**—Caforio extols the simplicity, ease and harmlessness of this method and the freedom from by-effects at the time or later. He found it effectual in 45 per cent. of the cases in which he has applied the method, the outcome depending in large measure on the age of the hydrocele and the pathologic process responsible for it. In four bilateral cases he aspirated a few c.c. of the fluid on one side alone and reinjected it with the usual technic, and the hydrocele on both sides retrogressed, showing the general action of the procedure. Jovane has reported similar retrogression of both a peritoneal and pleural effusion after reinjection of the peritonitic fluid alone. Carletti found that the peritonitic effusion alone was absorbed when he had reinjected pleural effusion. Other experiences in Italy with autoserotherapy are reviewed. The method seems to be promising when too much is not asked from it; when the hydrocele or other effusion is merely one manifestation of constitutional or heart or liver disease, it is folly to expect a cure from autoserotherapy alone.

Nordiskt medicinskt Arkiv, Stockholm

XLV, Internal Medicine No. 1. Last indexed July 27, p. 318

224 Twin Monsters. C. F. Heijl. Concluded.
225 Action on Heart of Maximal Acute Exertion. (Die akuten Anstrengungsveränderungen des Herzens.) I. Jundell and T. Sjögren.

Ugeskrift for Læger, Copenhagen

September 12, LXXIV, No. 37, pp. 1303-1342

226 *Importance of Hypersecretion for Diagnosis of Gastric Ulcer. (Til Mavesaarets Patologi og Terapi.) S. Kemp. Commenced in No. 36.

September 19, No. 38, pp. 1343-1362

227 *Can the Properties of Absorbed Light Rays be Conserved and Used in Therapeutics? (Kan Energien fra absorberede stærkt brydbare Straaler frigøres og anvendes terapeutisk?) T. Brinch.

226. **Hypersecretion with Gastric Ulcer.**—Kemp comments on the scant attention that has been paid Rubow's assertions in regard to the importance of large amounts of extremely acid stomach contents after a test breakfast as a sign of gastric ulcer. When the motor functioning is excessive, the stomach content is passed along so quickly that the amount of gastric juice secreted thereafter seems to indicate abnormally increased secretion, when in reality this is not the case. It depends on the motor functioning, therefore, whether the stomach content will be small in amount and extremely acid or large in amount with moderate acidity when there is hypersecretion with a qualitatively normal gastric juice. The only certain sign of hypersecretion is a very large and at the same time very acid stomach content one hour after the Ewald test breakfast, at least 120 c.c. of contents and an acidity of 80 or over. Kemp has been examining 550 patients with various stomach affections which he groups as ulcer, ulcer suspected and simple dyspepsia with nothing to suggest ulcer. The findings confirm anew the great diagnostic importance of the amount of residue for the diagnosis of ulcer. Whether fluids are taken with the test meal or not is immaterial, as water passes so quickly out of the stomach that the findings in regard to the chyme an hour later are not modified by it. In fact, the tendency of the dry meal is possibly to increase gastric secretion as chewing a dry tobacco will cause more saliva production than a moist tobacco. Kemp's research and reexamination of a number of his old patients reaffirm that an actual digestive hypersecretion can be assumed only when there is a large amount of very acid chyme or the absolute amount of hydrochloric acid is abnormally large, over 85 c.c. decinormal hydrochloric acid one hour after an Ewald test breakfast of 35 gm. rolls.

227. **Therapeutic Utilization of Stored Light Rays.**—What becomes of light after it has been absorbed by matter? The law of conservation of energy prevents anything from being actually lost, and consequently, Brinch asserts, the light rays entering matter are probably left in it, as they do not emerge again as light. The bactericidal powers they possess may be conferred on the matter that has absorbed them. He has been applying this principle in experimental research, inoculating animals with tuberculous sputum and injecting at the same time a 1.5 per cent. solution of quinin sulphate which had been exposed for two hours in a shallow dish to the direct sunlight. The results were negative, but the harmlessness of the procedure was established, and he has recently applied it in a case of lupus of forty years' standing, recurring anew each time after various methods of treatment, including Finsen phototherapy. The results were encouraging, the lupus subsiding as under Finsen treatment, although to a lesser degree.

Upsala Läkareförenings, Förhandlingar

XVII, No. 8, pp. 561-657. Last indexed Sept. 28, p. 1230

228 Propagation of the Râles in Pulmonary Tuberculosis. (Om rassels fortledning vid lungtuberkulos.) G. Bergmark.
229 *Roentgenoscopy in Diagnosis of Tuberculosis of the Kidneys. (Till frågan om njurtuberkulosens, speciellt den s.k. "kittnjurens," röntgendiagnostik.) G. Söderlund.
230 Pulse in Thickened Arteries. R. Friberger. See 119, p. 1412.

229. **Roentgenoscopy of Tuberculous Kidney.**—In the three cases reported, catheterization of the ureters was impossible on account of bladder complications. Roentgenoscopy, however, revealed which kidney was pathologic and thus rendered operative treatment possible. Söderlund does not regard roentgenoscopy as of much use alone for disclosing tuberculosis of the kidneys. But when tuberculosis is certain, roentgenoscopy may be the only means to localize the process.

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